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ECONOMIC

WHITE PAPER ON INTERNATIONAL TRADE - 1982

Tokyo DJIT in English No 175, 1982 pp 59-63

[Text: Japan's Role in Revitalizing World Economy]

The white paper, published each year by the Ministry of International Trade and Industry, contains a summation of findings of an analysis of foreign trade conducted by Japan during the preceding fiscal year (April through March) and a review of various problems of world economy and international trade involving Japan. The present issue is the 34th of the series.

In this issue, the Ministry focuses its attention on trade frictions, analyzes from a broader perspective the causes of current worldwide economic slump and the trends of the domestic economy, and considers from the standpoint of averting trade frictions and expanding world trade the direction in which world economy should be developed and the roles to be played by the Japanese economy in such a context.

World Economy Undergoes a Trying Period

After the war, world trade outraced production, and in the process, the various countries have become increasingly interdependent. With the industrialized economies facing deep-rooted structural problems, the deflationary effects of sharply increased oil prices have combined with the debilitating impacts of high interest rates to prolong economic stagnation and aggravate the already worsened unemployment in these countries. The economic slump in industrial nations, in turn, has put a serious drag on the developing economies, and the prolonged worldwide economic slump is adding fuel to the rising protectionist sentiments across the world. These developments are clouding the outlook of world trade.

The laggard economic recovery encourages the pessimist view that the worldwide economic slowdown is here to stay. What is worse, given the increasing tendency towards homogenization of industries of the developed countries and the intensifying competition from the developing countries in world markets, there has emerged a

growing tilt in many countries of the world toward shielding inefficient and marginal industries from foreign competition behind a protectionist wall. If left unchecked, such a tendency will inevitably lead to a contraction of world trade — and by extension — to a shrunken world economy. Indeed, the situation is so threatening that the need for revitalizing world economy through stimulation of demand, development of new technologies, and expansion of supply capacity has never been more urgent.

For its part, Japan must maintain the forward momentum and efficiency of its economy in ways contributory to the development of world economy, while taking care to bring the benefits of such economic growth to bear on the economic well-being of its people. In dealing with trade frictions, also, Japan should pursue policies designed to spur the revitalization of world economy and the expansion of a balanced world trade in line with the political imperatives discussed in the foregoing.

Current State of Stagnation in World Economy and Policy Prescriptions

Industrial Economies Grope for a Way out of the Current Recession

Throughout 1981, the industrial nations of the West were mired in economic stagnation, which was blamed on the deflationary effects of the oil crisis, the dampening impacts of high interest rates, and various problems rooted in their economic structure.

Most notably, the sharply increased oil prices helped breed persistent inflationary expectations in these countries which were stimulated by tight monetary policies and widening financial deficits. In addition, they had to raise their interest rates to the high level to match those of the United States if only to defend their currency and check the outflow of capital. These negative developments have combined to slow down the economies of the world.

In an effort to deal with the structural problems facing them, these governments are experimenting with new policy prescriptions designed to revitalize their economy.

Struggling Non-Oil Developing Countries and the Economies of the Communist Bloc Countries

Shares of developing countries in world trade have improved, while they are in process of being divided into diverse groups, each characterized by different stages of economic development and by different sets of economic problems.

The first group includes the newly industrializing countries of Asia whose economy has been growing at a rapid pace thanks to their drive for development of export-oriented industries. In recent years, however, the sharply increasing wage costs in these countries have eroded their

competitive edge in the field of labor-intensive industries.

Included in the second group are the non-oil developing countries. Because of their heavy reliance on exports of primary products, their export earnings are vulnerable to the shifting currents of world markets and this hampers the economic development of these countries.

The multiple polarization of developing countries and the resultant divergence of interests further complicate the problems in relations between the industrialized North and the developing South.

The Soviet Union and the East European countries are plagued with stagnating investment and production bottlenecks. On the other hand, China is vigorously pushing ahead with an economic adjustment program.

The Unsettled Exchange and International Money Markets

1) Exchange rates of the currencies of industrial nations are fluctuating wildly reflecting the changing behavior of their economic fundamentals, political situations, and particularly in recent months, the interest-rate differentials. Diversification of reserve currency, also, is adding to the volatility of their exchange rates.

2) Stability of exchange rates is indispensable to the steady growth of world economy, and it calls for restraints in the operation of monetary policy and a close coordination among the leading-currency countries.

3) Owing to the deterioration in the current account balance of OPEC members, the growth tempo of petrodollars has slowed down, and the member countries of OPEC have become increasingly earnings- and safety-conscious in the operation of their surplus funds.

4) Meanwhile, external-debt service charges are severely straining the finance of non-oil developing countries. External debts of the East European countries have continued to balloon, and they are asking their Western creditors for a rollover of their debts.

5) In face of the growing danger of default by these debtor countries, pressure is mounting on international agencies to relieve the Western private banking institutions of the risk.

International Energy Situation and the Economic Situation of the OPEC Members

Energy consumption in developing countries and the Communist bloc countries is increasing, and the energy problem has taken on a serious proportion in these countries, while the industrial nations are making determined efforts to diversify out of oil. Thanks to the growing conservation of energy and the development of non-oil energy sources in the industrial nations, on the one hand, and owing to the tardy recovery of the world economy and increases in the oil production of Non-OPEC members, on the other, the oil supply on the world markets has tended to ease.

Foreign Trade and Industrial Structure of Japan

The Weakening Yen and Mixed Performance

Following a large deficit in 1980, the current account balance of Japan improved sharply in 1981. On the other hand, the balance of long-term capital account registered a large net outflow.

Given the structural bias of its balance-of-payments position, Japan must endeavor in coming years to build cooperative foreign economic relations and create a healthy balance-of-payments position.

Despite the improvement in the current account balance, the yen rate remained low through the better part of 1981, and this was attributable to the large in-

terest-rate differentials that persisted between the United States and Japan. The weakened yen had a profound impact on the exports and imports and the domestic economy of Japan.

Although prices remained calm and the balance-of-payments position improved, domestic demand failed to pick up and the uneven distribution of vigor became pronounced over the year.

Exports Slow Down in the Second Half

In the 1970s, Japanese industry strengthened its competitive position in the field of growth products, and its export sales in the world markets advanced markedly. And owing to their unremitting efforts to penetrate foreign markets, Japanese firms have established a foothold in an increasing number of countries. As a result, the dollar value of Japan's exports in 1981 increased 17.1 percent over the preceding year, to \$152,030 million. However, the pace of advance slowed down with each passing quarter.

Exports of plant also increased steadily in 1981. In an effort to meet foreign demand for plants which have lately become increasingly large and sophisticated, Japanese plant exporters formed or participated in international consortia.

Stagnating Imports

The dollar value of imports into Japan in 1981 grew by a two percent over the preceding year, to \$143,290 million. And the demands of the Western industrial nations for an increase in the import of finished products from these countries have become increasingly vocal. The Japanese market is no less open to foreign competition than those of the Western countries. However, for the sake of steady development of world trade, Japan is making due efforts to increase its imports of finished products.

Foreign Trade and Industrial Structure of Japan, and the Course They Should Take

Japan has developed its economy by changing the structure of its industry into a technology- and capital-intensive one and by devoting major efforts to the production of goods having a higher added-value. As is implicit in such a development, export sales have played a critical role in the economic growth of this country. Particularly, the direct and indirect ripple effects of exports on supportive industries have been very large.

In the course of upgrading the foreign trade and industrial structure and of shifting resources to the production of high value-added goods, the fabricating and assembling industries have come to play the leadership roles. And they had to increase productivity by stepping up their investment in research and development and in new plants and equipment. Indeed, it was the constantly improving productivity which helped Japanese industry ride out the jolting dislocations caused by the twice-occurring oil crisis.

Therefore, it is important for Japan to continue its effort to further upgrade its foreign trade and industrial structure, increase the value-added components of its products, and develop its economy in ways harmonious with, and contributory to, the development of the world economy.

Japan's Role in Revitalizing World Economy

Current State of Trade Friction and Options Open to Japan

The prolonged worldwide economic stagnation, the swelling ranks of unemployment, and the intensifying political instability have combined to generate added pressure to the already worrisome protectionism. The growing bilateral trade deficits between Japan and its Western trading partners is stiffening their demand to open the Japanese market to their exports. In response, Japan has been making positive efforts to achieve an expanded balance of trade with these countries and cooperate for the revitalization of the world economy.

The World Economy and Industrial Adjustment

Owing to the weakening in their competitive position in relation to other industrial nations, to the intensifying competition from developing countries, and to the sharply changed supply-and-demand structure, industrial nations are faced with a growing pressure for industrial adjustment. Particularly since the oil crisis, the growth rate of labor productivity has varied from one country to another; the pace of industrial growth has become increasingly uneven owing to the fluctuating exchange rates; the

employment opportunities created by the manufacturing industry as a whole have decreased, necessitating a shift of labor from one industry to another. Resolution of these problems calls for a vigorous industrial adjustment within these industrial nations with a view to developing the kind of scheme of international division of labor that will contribute to the revitalization of the world economy.

International Involvement of Japanese Firms and Industrial Cooperation

To revitalize the economies of the Western industrial nations, exchanges of capital and technology between Japan and these countries should be accelerated and the kind of industrial cooperation conducive to the rejuvenation of their industries must be actively encouraged. Such an arrangement will not only help these countries revitalize their economies but also will help Japanese firms achieve greater involvement in world markets and create harmonious foreign economic relations for Japan.

Stable Growth of the World Economy and the Roles Japan Should Play

1) Thanks to the increased weight which the Japanese economy has acquired in the world economy, Japan has come to exert an important influence in the economic affairs of the world. Therefore, Japan must be aware of its responsibility and make due contribution to the stable development of the world economy.

2) One contribution it can make lies in the development of original technologies of its own and the sharing of them with other countries. Japan has long been relying on the Western industrial nations for research in basic technology and has concentrated its efforts in the application and improvement of such technology. In the coming years, however, it is important for Japan to devote greater efforts to creative research and development on its own with basic technology not excluded, and to share the fruits of such efforts with other countries to accelerate the development of the world economy.

3) Another contribution it can make is to extend comprehensive economic aid to developing countries geared to their needs to help them accelerate their economic development.

Toward a Fresh Development of the World Economy

1. Revitalization of the world economy calls for stepped-up cooperation and coordination among the industrial nations.

The industrial nations must

- 1) reaffirm their belief in free trade and build the foundation for a fresh development of the world economy,

- 2) take a positive stance on the development of their economies, and
- 3) endeavor to improve productivity and economic efficiency by upgrading their industrial structure and by developing technology.

2. It is necessary for Japan to seek to harmonize its economic development with the world economy.

To achieve such a goal, Japan must

- 1) achieve vigorous growth of its economy through expanded domestic demand,
- 2) upgrade its foreign trade and industrial structure and increase the production of high value-added goods, and
- 3) step up its business activities in overseas markets in ways conducive to achieving greater international harmony.

3. Further, it is necessary for Japan to make greater contribution to the stable development of the world economy and trade and to the revitalization of the world economy.

Toward this end, Japan must

- 1) endeavor to maintain free trade by opening its market to foreign competition and by involving itself more actively in international affairs,
- 2) vigorously promote industrial cooperation with a view to building a harmonious international division of labor,
- 3) actively extend economic aid for the economic development of the developing countries, and
- 4) vigorously develop leading-edge technologies and make them available to all interested parties of the world. ■

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ECONOMIC

TRADE WITH ASIAN COUNTRIES

Tokyo DJIT in English No 177, 1982 pp 3-13

[Text]

General Trends

Japan's export trade with Asian nations amounted to \$34.4 billion in 1981 which was an 11.4 percent increase over the preceding year. Imports amounted to \$31.9 billion or a 0.6 percent increase over the preceding year. But the growth rate showed a major decline in comparison with Japan's general export-import growth (export= 17.1%, import= 2%) and the previous year's growth (export= 18.3%, import= 21.2%).

Japan's Asian share was 22.6 percent of the export total and a decrease of 1.2 percent from the preceding year's 23.8 percent. On the import side, the Asian share occupied 22.3 percent and a slight 0.3 percent decrease from the preceding year's 22.6 percent.

Export Trends

Virtually all of the nonoil-producing countries of Asia were affected by the economic stagnancy of the advanced countries. The result was poor exports of primary products and manufactured goods and a growing economic stagnancy trend on the domestic scene which caused a reduction of Japanese exports. A notable point was comparatively smooth exports to the ASEAN countries which promoted economic development.

By product, machine tools occupied 52.8 percent of total exports (up 16.4% over the preceding year). Among the general machinery products, farm machinery (down 16.5%) and metal working machinery (down 4.1%) decreased from the preceding year. However, prime movers (up 30.6%) and heating and cooling machinery (up 27.6%) increased which resulted in a 15.9 percent growth amounting to \$4.1 billion.

Note: All figures in this article are based on MITI's 'White Paper on International Trade' (1982 edition). The English version will come out in coming mid-November through Japan External Trade Organization (JETRO). For more detailed information, please write to: JETRO, 2-5, Toranomon 2-chome, Minato-ku, Tokyo 105, Japan Telex: J24378 (JETRO)

In the case of electric machinery, radio-attached tape recorder (29.5% decrease) and radio (19.1% decrease) showed a big retreat after recording a high growth rate until the preceding year. However, generators (up 80.3%), electromotors (up 28.1%) and heavy electric machinery showed a 34.0 percent increase. Others maintained a high export level amid a stagnant export trend were thermal electronic tube-semiconductor element (up 21.4%), tape recorder (up 57.9%) and color television (up 32.5%). Electric machinery as a whole recorded a 15.8 percent increase amounting to about \$6.0 billion.

In the transportation machinery field, the main export item was the automobile which slowed down from the major increase of the preceding year. However, car exports still showed an 11.1 percent increase.

Exports of used and rebuilt ships showed a 22.0 percent decrease from the previous year. However, cargo ships which are the chief export item, showed a 26.7 percent increase. Tankers recorded a 4.9-fold increase while small floating docks and floating structures showed an 11.2-fold increase which accounted for a 34.7 percent increase in this category. Transportation machinery as a whole showed a 16.9 percent increase amounting to \$4.5 billion.

Like other machinery, precision instrument exports slowed down but still recorded a 20.1 percent increase amounting to \$1.4 billion. The entire machine tool export total showed a 16.4 percent increase amounting to 18.1 billion which was a slight drop from the 20.5 percent recorded in the previous year.

In the case of metal products which occupy an export weight of 18.6 percent, there was a major slowdown in steel exports because of a slack in domestic demand of the importing countries and expansion of domestic supply capability. There was a 5.4 percent decrease in volume in comparison with the preceding year although there was only 1.0 percent increase in value. Non-ferrous metal showed a 25.8 percent drop from the preceding year because of decreasing demand for copper and copper alloys resulting in a 14.1 percent decrease in this category.

In the metal product field, a 19.7 percent increase was recorded because of the favorable performance of the principal items of steel structure fabrications (up 29.9%) and steel tanks (2.6-fold increase). Metal products as a whole showed a small 1.7 percent increase amounting to \$6.4 billion.

In the chemical product field, there was a drop from the previous year in exports to Taiwan, Thailand, the Philippines and Pakistan among the leading importing countries. Total exports amounted to \$3.0 billion or a 0.7 percent increase.

Textile products which are the main items in the light industry field, continued to increase. Cotton fabrics which have a comparatively high export weight, showed a 20.9 percent increase while secondary textile products

increased by 12.4 percent although both items recorded a smaller growth than the preceding year. Since man-made fiber textile yarns showed a growth over the preceding year, there was a 10.6 percent increase in textiles as a whole which amounted to \$2.4 billion.

Among nonmetal and mineral products, increases were recorded in exports of sheet glass (up 56.6%), tile (up 26.0%) etc., which resulted in a 12.1 percent increase valued at \$595.6 million in this group. However, cement products recorded a 4.6 percent decrease because of a lowering of export competitive power and firebrick demand dropped 29.5 percent from the preceding year.

Among the other light industrial products, making a favorable showing were paper and paper products (up 19.9%), buttons (up 31.8%), magnetic tapes (up 32.8%) and musical instruments (28.6%) although the amount was not large. Other light industry products achieved a steady growth to record a 20.3 percent increase amounting to \$1.9 billion.

In the fish and shellfish category of food products, fresh fish showed a 42.2 percent increase but processed fish and shellfish which made a favorable showing in the preceding year, recorded a 14.2 percent decrease because of the poor showing of canned mackerel (down 75.7%). As a result, the fish and shellfish export total recorded a 6.2 percent decrease.

Dried mushrooms continued to make a favorable showing (up 20.9%) over the preceding year in volume but the value decreased by 11.6 percent because of a drop in the export price.

In the grain category, there was a big increase of 72.0 percent in rice exports. The reason was cold weather damage which hit South Korea. Food products as a whole increased by 33.1 percent with the value amounting to \$762.4 million.

There was a decrease in exports of oil products to South Korea compared to the preceding year in the mineral fuel category. But exports to Hong Kong and Taiwan increased over the previous year. Man-made rubber exports to the ASEAN countries showed a 23.3 percent increase. India recorded a 2.4-fold increase.

However, exports to South Korea, Taiwan, etc., which occupy a high ratio, showed a decrease. As a result, mineral fuels as a whole showed a slight increase of 3.8 percent valued at \$605.7 million.

Import Trends

The reasons for the major slowdown of Japan's imports from Asian nations are believed to be caused by Japanese economic stagnancy and the permeation of the energy-saving policy which have resulted in sluggish imports of raw materials and energy-related products.

Mineral fuel imports which occupy 55.1 percent of total imports from Asia, recorded a slight 6.8 percent increase over the preceding year amounting to \$17.6 billion. But the total was affected by rising prices. For example, crude oil which occupies 62.0 percent of mineral fuel showed a 7.6 percent decrease from the preceding year on a continuing basis. But there was 1.0 percent increase in value. Liquefied petroleum gas which occupy 23.4 percent of the total showed a 0.9 percent reduction from the preceding year. But there was an 11.0 percent increase in value.

On the other hand, oil product imports consisting mainly of heavy oil and naphtha, showed a 32.1 percent increase over the preceding year.

In the case of manufactured products which occupy 18.8 percent of total imports, the efforts to increase imports amid sluggish domestic demand resulted in a 9.0 percent increase from the switch to minus imports last year. The import total amounted to \$6.0 billion.

Raw materials which occupied 15.2 percent of total imports, showed a big decline from the \$6.4 billion recorded in the preceding year to \$4.8 billion last year (24.8% decrease). The reason was Japan's economic stagnancy which greatly reduced demand.

Food product imports showed a 6.2 percent decrease in 1980 but recovered in 1981 as there was a 3.3 percent increase amounting to \$3.1 billion. A breakdown of the main meat products showed that pork increased by 23.8 percent and chicken 78.1 percent. Fish and shellfish imports which occupy 55.9 percent of food product imports, recorded a 15.0 percent increase.

In the case of grain products, a poor glutinous rice harvest in Japan resulted in a 5.9-fold increase in imports of the product from Thailand. About 73,000 tons which

was a 9.0-fold increase in value, was imported from the Southeast Asian nations. It is said that Thailand recorded the highest corn crop (feed use) in its history. But the relatively high price and the quality problem led to unsuccessful efforts to conclude a private import agreement. As a result, there was virtually no imports of corn which led to an 11.5 percent decrease of grain imports as a whole.

In the fruit and vegetable category, the leading import item of banana decreased in volume because of a drop in demand. But there was a 16.8 percent increase in value. Among the other products, fresh pineapple increased by 17.0 percent, beans 2.4-fold increase and onions 2.2-fold increase. As a result, there was a 9.0 percent increase in the fruit and vegetable field as a whole.

In the sugar category, there was a 53.5 percent decrease from the preceding year on a continuing basis because of stock adjustments and poor demand. There was a 60.3 percent decrease in value because of a decline in the international market. Molasses showed a 4.8 percent increase in value because of rising prices but there was a

12.7 percent decrease in volume which resulted in a sharp decrease of 48.5 percent for sugar as a whole.

Among the other products, coffee recorded a 25.9 percent decrease and black tea also decreased by 19.2 percent. But feed products with bran playing a key role made a favorable performance resulting in a 29.2 percent increase over the preceding year.

Trade with ASEAN

Japan's export trade with ASEAN countries amounted to \$15.1 billion in 1981 or a 16.6 percent increase over the preceding year. But the increase rate was much smaller than the 35.1 percent recorded in 1980. The 1981 total occupied a 10.0 percent share of the nation's total exports which maintained the previous year's level.

On the import side, the total amounted to 20.9 billion last year or a 1.2 percent decrease compared to the 30.3 percent increased recorded in 1980. The ASEAN import share of total imports also dropped to 14.6 percent from the previous year's 15.1 percent share.

As a result, Japan's export-import balance with ASEAN showed an import excess of \$5.7 billion. The import excess margin dropped by \$2.4 billion from the preceding year.

Although there was a general economic slowdown in both the oil-producing and non-oil producing countries, the export growth rate remained settled. There was a 14 to 19 percent increase of exports over the preceding year.

It is believed that the increase was sustained by the deep-rooted demand in the ASEAN countries for materials concerned with economic development and goods for stabilizing the livelihood of the people.

By country, exports to Singapore which occupy 2.9 percent of Japan's total exports, amounted to \$4.4 billion (10th in export amount) or a 14.2 percent increase over the preceding year. Following Singapore were Indonesia occupying 2.7 percent (ranking 11th) amounting to \$4.1 billion or a 19.2 percent increase, Malaysia with 1.6 percent (ranking 15th) amounting to \$2.4 billion or a 17.6 percent increase and Thailand with 1.5 percent (ranking 16th) amounting to \$2.2 billion or a 17.4 percent increase.

On the import side, the economic stagnancy in this country and the progress of saving energy expenses as well as the slack in the primary product market since the beginning of this year resulted in a marked growth of imports from Singapore and a slight increase from Indonesia. However, imports from the three other ASEAN countries showed a major decrease.

By country, imports from Indonesia (third in import amount) which occupies 9.3 percent of Japan's total imports amounted to \$13.3 billion or a slight 1.1 percent

increase. Following Indonesia were Malaysia (ranking 10th) occupying 2.0 percent amounting \$2.9 billion or a 15.7 percent decrease, Singapore (ranking 18th) occupying 1.4 percent amounting \$1.9 billion or a 29.0 percent increase, the Philippines (ranking 20th) occupying 1.2 percent amounting to \$1.7 billion or an 11.3 percent decrease and Thailand (ranking 26th) occupying 0.7 percent of total imports amounting to \$1.0 billion or a 5.2 percent increase.

Exports by products showed that heavy chemical and industrial products which occupied 86.1 percent of total exports to the ASEAN countries amounted to \$13.0 billion (up 17.0% over the preceding year). The growth rate for machine tools (export composition ratio of 57.9% toward ASEAN) showed a 21.6 percent increase over the preceding year, metal products (composition ratio 20.5%) increased by 11.4 percent and chemical products (composition ratio 7.7%) increased by 1.8 percent.

Exports of light industrial products which occupy 10.7 percent of the export total amounted to \$1.6 billion (16.8% increase over the preceding year), textile products (4.4% increase) showed a 7.8 percent increase, non-ferrous mineral products (1.7%) showed a 22.2 percent increase and other light industrial products (4.6%) recorded a 24.7 percent increase over the preceding year.

Food products which occupied 1.2 percent of the export volume, amounted to \$178.8 million (down 9.3% from the preceding year). The main items were fish and shellfish which showed a 1.5 percent decrease from the previous year and grain products decreased by 44.0 percent, while fruits and vegetables recorded a 28.0 percent increase.

Raw material and mineral fuel exports which occupy 1.0 percent of the export volume, amounted to \$155.2 million (up 24.0% over the preceding year). The main items of synthetic rubber and mineral fuel showed increases of 23.3 percent and 64.2 percent respectively.

On the other hand, mineral fuel occupying 69.0 percent of imports amounted to \$14.4 billion (9.6% increase over the preceding year). The amount occupied 82.2 percent of the mineral fuel import volume from Asia. The imports are from all ASEAN countries except Thailand. Fuel imports from Indonesia occupy 81.9 percent of the ASEAN total.

Raw material imports occupied 18.0 percent of the total amounting to \$3.7 billion (down 28.0% from the preceding year). Major products among them include lumber (import composition ratio 9.0% toward ASEAN) with a 35.6 percent drop from the previous year, non-ferrous metal ores such as copper and nickel ores (5.2%) with a 22.1 percent decrease and rubber with a 17.4 percent decline.

Manufactured goods imports occupied 6.3 percent amounting to \$1.3 billion (down 2.3% from the previous

year). In this category, non-ferrous metals (import composition: 2.1%) occupied 96.7 percent of which block tin recorded an 18.8 percent decrease from the preceding year while electric machinery which occupies 49.4 percent of machinery and equipment (import composition 1.7%) registered a 30.2 percent increase.

Food imports occupied 5.9 percent of the import total amounting to \$1.2 billion (down 4.2% from the previous year). Major products (composition of 2.2% toward ASEAN) which recorded a 5.9 percent gain, fruits and vegetables (composition: 1.4%) recorded a 21.6 percent increase and sugar products (composition: 0.9%) recorded a 45.9 percent decrease.

Trade with Newly Industrialized Countries

South Korea

In trade with South Korea during 1981, exports marked \$5.6 billion or a 5.4 percent increase over the preceding year (14.1% decrease recorded in 1980) and imports amounted to \$3.3 billion or a 13.1 percent gain (10.8% decline in 1980). As a result, the balance of trade toward South Korea turned out to be an excess of exports totaling \$2.2 billion. The scope of excess export, however, recorded a reduction of \$103.1 million from the previous year.

Export Trend

Machine tools occupying 40.7 percent of the export total declined continuously and recorded one percent or \$2.3 billion. Especially heating and cooling equipment (down 56.5%) and loading machinery (down 31.5%) in this category recorded a major drop for three consecutive years and metal processing machinery (down 52.0%) a sharp decline for two consecutive years.

On the other hand, backed by a favorable trend, textile exports made a good showing. Textile machinery (up 81.9% from a 62.3% decrease in 1980) made a major recovery followed by internal combustion engines (up 13.8% from a 4.6% decrease), electric machinery (up 10.4% from a 7.4% decrease) and precision machinery (up 18.1%).

Metal products (down 10.3%) occupying 17.6 percent of total exports registered a 1.9 percent decrease from the previous year amounting to \$996.1 million

while steel, a major export item occupying 80.1 percent, marked a 2.5 percent decrease on a continuing basis from the previous year.

In the light industrial product sector, textile products showed a 12.0 percent increase as a result of a major growth and recovery of yarns (up 41.3%) and secondary

textile products (21.0% increase from a 21.5% decrease), while food products showed a 676,000 tons (4.3-fold) increase of rice exports because of a poor rice harvest in South Korea in 1980. Food products as a whole showed a 4.1-fold increase amounting to \$340 million.

Import Trend

Balancing trade with Japan which had been a long-pending problem for South Korea began moving toward improvement due to increased imports.

By product, although textile products occupying 30.3 percent of the import total have dropped to a level of 20 percent for two successive years due to sluggish demand for yarns, man-made fabrics in woven goods (10.2% increase from 36.0% decrease) increased by 43.1 percent. In the secondary textile product field (35.7% increase from 32.6% decrease) which occupies 63.3 percent in value of textile product imports, the principal woven apparel products gained by 30 to 55 percent, contributing to a rapid recovery with a 37.2 percent increase for apparels in general and a 16.6 percent increase amounting to \$1.0 billion for textile products as a whole.

Food products (12.0% decrease from the previous year) occupying 19.8 percent of the export total gained by 14.8 percent due to demand recovery for fishery products (up 20.5% from down 19.8%) which occupy 79.5 percent in the food bracket and steady growth of edible seaweeds.

Steel occupying 11.3 percent of the import total marked as a whole a 34.4 percent increase amounting to \$383.9 million with a sharp gain of steel hoops imports in volume amounting to 446,300 tons (4.5-fold) or \$136.6 million (13.9 times) as a result of full-scale production at the Pahang Steel Plant in addition to a steady growth of heavy plates (up 14.5%) and light steel sheets (up 24.0%).

In the previous year, the machinery and equipment sector showed a major gain amid sluggish import trends but this year it registered a mere 5.3 percent increase amounting to \$379.0 million in value because its principal electric machinery marked only a 1.6 percent increase down from a 24.2 percent increase last year, the general machinery category dropped from a 38.0 percent increase to a 20.7 percent increase and the precision machinery from 26.5 percent to 17.0 percent.

Moreover, it merits attention that raw materials (down 26.8% from the previous year) recorded a large decline continuously from the previous year while oil products and footwear imports have recovered.

Taiwan

In trade with Taiwan during 1981, exports marked \$5.4 billion or a 5.0 percent increase over the preceding year (up 17.8% over last year) while imports amounted to \$2.5 billion or a 10.0 percent increase (down 7.4% from the previous year). Exports fell far below those

toward Asian nations in total volume while imports recorded a 1.9 percent increase over the 1979 imports.

Excess exports toward Taiwan amounted to \$2.8 billion or a \$29.7 million increase over the previous year.

The Japanese weight on the Taiwanese side in terms of overseas transactions has recently been sluggish but Japanese exports still ranked next to the U.S. with 11.0 percent (11.0% for the preceding year) and its imports ranked first with a weight of 28.0 percent (27.1 percent for the previous year). From the Japanese side, exports ranked fifth (fourth for the preceding year) or 3.6 percent (4.0% for the previous year) while imports ranked 13th (14th for the previous year) or 1.8 percent (1.6% for the previous year).

In light of the fact that Japanese trade, both export and import, depends heavily on the U.S. (25.4% for exports and 17.7% for imports) and the import ratio of energy (mineral fuel) to Japan's whole import value stands quite high (50.6%), Japan can be considered to hold an extremely important position in this regard.

Hong Kong

In trade with Hong Kong in 1981, exports recorded \$5.3 billion or an 11.5 percent increase over the preceding year (up 29.4% from the previous year) while imports amounted to \$669.1 million or a 17.5 percent increase (down 14.2% from the preceding year). Imports, therefore, showed a sharp recovery but the excess margin of exports amounted to \$4.6 billion or a \$450.0 million gain over the preceding year.

Trade with Socialist Bloc

China

In trade with China in 1981, exports amounted to \$5.0 billion or a 0.3 percent increase over the previous year while imports amounted to \$5.2 billion or a 22.4 percent increase resulting in an adverse balance of trade for Japan amounting to \$196.3 million (an excess of \$755.0 million in exports for Japan in the preceding year) for the first time in 17 years.

The Chinese share in Japan's two-way trade with China has reached 3.4 percent for exports (3.9% for the previous year) and 3.7 percent for imports (3.1%).

By product for export, heavy chemical products occupying 82.6 percent of the export total amounted to \$4.2 billion or a 3.8 percent decrease as a whole because of declining exports of steel, a principal item, by 25.8 percent and chemical products by 3.7 percent although machine tools increased by 13.4 percent.

Exports of light industrial products occupying a 15.5 percent share amounted to \$787.5 million or a 27.3 per-

cent increase as a whole because of a 48.4 percent increase for textile products while other light industrial products decreased by 34.0 percent.

On the other hand, mineral fuel imports amounted to \$2.9 billion or a 23.5 percent increase because in this specific category occupying 55.5 percent, crude oil increased by 12.5 percent in volume and 19.5 percent in value, coal by 61.9 percent and oil products by 34.4 percent.

Manufactured goods occupying a market share of 23.9 percent increased as a whole to \$1.2 billion or a 32.5 percent increase due to a 30.6 percent gain of non-metal products and others and a 23.5 percent increase of chemical products including organic compounds and resins.

Although the amount is marginal, machine tools increased eight times as much as the previous year.

Raw material products as a whole increased by \$514.3 million or a 2.8 percent increase while food products increased amounted to \$556.1 million or an 18.2 percent increase as a whole because meat products increased by 37.5 percent, fishery products by 3.3 percent and fruits and vegetables by 34.8 percent.

North Korea

Trade with North Korea in 1981 turned out to be sluggish with exports amounting to \$291.0 million or a 22.3 percent decrease and imports totaling \$139.5 million or a 22.5 percent decrease. As a result, Japan's excess margin of exports toward North Korea decreased to \$151.5 million from the previous year (\$194.3 million).

Chemical industrial products occupying 82.3 percent of the export total decreased to \$221.3 million or a 17.7 percent decrease due to an 8.1 percent decrease of chemical products, a 6.7 percent decrease of metal products and a 23.3 percent decrease of machine tools.

Light industrial products occupying 16.4 percent decreased to \$47.6 million or by 35.7 percent because of a 39.5 percent decrease of textile products and a 34.6 percent decrease of other light industrial products.

On the other hand, in the import sector, manufactured products occupying a weight of 38.0 percent decreased to \$53.0 million or by 39.0 percent because of a 39.8 percent decrease of other products due to sluggish steel and non-ferrous metal transactions.

Raw materials occupying a weight of 27.4 percent decreased to \$38.3 million or by 16.9 percent as a whole due to a 53.5 percent decrease of silk despite a 19.2 percent increase of zinc ores.

Heavy oil decreased to \$8.1 million or by 18.6 percent due to no oil imports despite a 31.4 percent increase of anthracite coal.

However, food products as a whole increased to \$38.0 million or 6.1 percent because of a 48.6 percent increase

of fruits and vegetables although fishery products remained on the same level as the previous year.

Note: Limited space prevents explanation of export-import details of Taiwan, Hong Kong, China and North Korea.

Japan's trade with Asian countries during the first half of 1982 (January-June) amounted to \$16 billion in exports or a 6.6 percent decrease. Imports amounted to \$15.5 billion or a 3.7 percent decrease during the same period of the preceding year. Compared to the trend for the January to April period, the export decrease pace was virtually the same but imports showed a faster rate of reduction of 0.9 percent for the period.

The trend of Japanese trade with the Asian region experienced a change from 1981 with this country recording an excess of exports from the past excess of imports. This pattern is continuing in the first half.

But the export excess amount which was \$1.1 billion during the first half of 1981, decreased to about \$600 million during the same period of 1982, the decrease indicates a trend toward balanced trade between the two sides.

Because of space problems, some features of trade trends will be introduced in the following paragraphs according to regional groups.

Trade with ASEAN

Priority Given to Capital Goods Imports

Japan's trade with ASEAN has declined both in the export and import fields. There has been a change in the trade pattern from the 14 to 19 percent increase of exports recorded in 1981. The trade content indicates that there was a major decline in trade with only Thailand. In 1981, Thailand recorded an excess of imports in its trade with Japan which occupied 44 percent of its trade deficit. Thailand's one-sided trade widened to a 1:2.4 ratio.

In the case of Malaysia, the nation switched to an excess of imports in 1981 for the first time in 20 years. There was also a move toward reviewing the rapid development tempo which resulted in a reversal of the rapid expansion of trade with Japan.

Trade with the remaining three ASEAN countries has increased slightly or maintained the same volume as the preceding year. This indicates firm demand in these countries on a long-term basis.

The demand is reflected in the ups and downs of exported products. For example, there has been an 8.3 percent increase in the corresponding period of the preceding year in the light industrial product field centering on man-made fiber and secondary products. A 32 percent increase in musical instrument exports indicates a basic advance in consumer livelihood.

Heavy chemical products as well are maintaining a 10 percent increase while steel products recorded a 14.2 percent increase and general machinery for mining, construction and textiles a 12 to 15 percent increase on the average.

On the other hand, however, there are a number of items including TV sets and radios in the field of durable consumer goods which have shown a setback in the 20-percent level.

An import control policy has conspicuously been adopted on certain consumer goods due to the leveling off of real income and the worsening situation in acquiring foreign currencies.

Incidentally, the communication equipment components and transportation equipment showed a drastic decrease from the corresponding period last year by 24 percent and 23.3 percent respectively. This seems to have reflected a reaction to the major growth from 1980 through 1981.

Imports from ASEAN countries have decreased mainly due to the setback of imports from Indonesia whose export dependency upon Japan has now reached nearly 50 percent (47.7 % share in 1981).

Increased imports from Singapore are attributed to the growth of oil products.

Crude oil imports from the two oil-producing countries of Indonesia and Malaysia showed a decrease from January to June this year with a daily volume of 6,070,000 barrels from Indonesia (down 17 % from the preceding year) and 80,000 barrels from Malaysia (down 15 %).

Despite concern over non-oil exports at the end of 1981 when the Indonesia Government newly induced the counter Purchase system, the import total showed a slight decline of 8.9 percent even with an aforementioned drop of crude oil imports during January through June.

In general, a quest for increased product imports to Japan is about to be strengthened at the bilateral trade conferences in the latter half of the year.

In December 1982, the Japan-ASEAN Economic Cooperation Conference is scheduled to be held in Manila.

Trade with Newly Industrialized Countries

Spotty Export-Import Movement

There is an uneven export-import trend in this group. The export volume in 1982 (January-June) showed a 14.7 percent decrease. But imports by Japan increased by 6.9 percent.

The slowdown of exports began in 1981 centering on South Korea and Taiwan. Hong Kong joined the two countries in 1982 which made a decline unavoidable.

Japanese exports have been affected by the moves of these countries to carry out adjustments for export industrialization and industrial reorganization. In Feb-

Japan's Trade with Asian Countries in 1981

(Unit: US\$ thousand)

Country	Exports		Imports	
	Amount	CP (%)	Amount	CP (%)
Grand Total	34,426,148	111.4	31,930,198	100.6
ASEAN Total	15,194,002	116.6	20,968,426	98.8
Thailand	2,250,553	117.4	1,061,093	94.8
Singapore	4,467,920	114.2	1,943,780	129.0
Malaysia	2,424,374	117.6	2,927,034	84.3
Philippines	1,928,332	114.6	1,731,222	88.7
Indonesia	4,122,823	119.2	13,305,297	101.1
Others Total	19,232,146	107.6	10,961,772	104.0
South Korea	5,657,863	105.4	3,388,915	113.1
Taiwan	5,404,570	105.0	2,522,501	110.0
Hong Kong	5,310,506	111.5	669,132	117.5
Brunei	93,278	105.5	2,907,495	89.6
Cambodia	10,415	40.9	669	117.8
Laos	8,953	71.8	3,787	64.4
Burma	249,681	116.5	63,085	82.8
India	1,197,187	130.9	1,056,731	104.2
Pakistan	637,682	102.4	218,974	103.5
Sri Lanka	233,659	98.9	68,073	123.9
Maldives	3,466	87.6	2,872	109.5
Bangladesh	284,688	87.2	34,382	122.9
Macao	15,848	88.2	22,026	80.0
Afghanistan	79,793	76.9	845	59.8
Nepal	44,228	114.3	2,270	26.7
Bhutan	329	177.8	12	50.0

Source: MITI White Paper on International Trade

Note: CP indicates comparison with previous year

ruary, 1982 Taiwan banned imports of about 2,500 consumer goods in its trade with Japan. This import control move is also affecting Japan. This import control move is also affecting Japan's exports.

On the import side, there has been a marked increase of fishery products from South Korea and Taiwan. Imports of South Korean steel and electric machines have also increased.

Trade with West Asia

Trade Toward India and Pakistan is Brisk

Trade toward Japan mainly by India and Pakistan has become brisk after a long interval.

Its background can be analyzed as follows:

- 1) India has acquired a firm footing for the remodeling of its industrial structure for the coming three years by acquiring a loan of \$5.7 billion (5 billion SDR) from IMF last fall;
- 2) In India and Burma, demand for capital goods centering on oil development-related equipment is showing

Japan's Main Exports to ASEAN Countries by Item

(Unit: US\$ thousand)

Item	1980	1981	
	Amount	Amount	Composition ratio (%)
Light industry product	1,362,659	1,585,997	10.4
Textile	615,594	663,568	4.3
Heavy chemicals	11,204,978	13,120,252	86.3
Chemicals	1,167,693	1,198,135	7.8
Plastics	386,371	414,050	2.7
Iron & steel product	2,126,868	2,304,967	15.1
Steel plate & sheet	963,413	1,000,139	6.5
Steel pipe & tube	406,084	583,565	3.8
Fabricated metal product	443,546	580,866	3.8
Industrial machinery	2,396,625	3,010,941	19.8
Mining & construction machinery	523,553	453,271	2.9
Electric equipment	2,063,141	2,444,686	16.0
Heavy electric equipment	412,936	522,630	3.4
Communications equipment	587,971	623,622	4.1
Transportation equipment	2,522,442	3,030,941	19.9
Automobile (exc. parts & accessories)	1,513,900	1,795,886	11.8
Motorcycle, Auto parts & accessories	314,605	414,326	2.7
Vessel	382,379	534,496	3.5
Grand total	13,029,244	15,194,002	100.0

a steady growth.

In general, it is predicted that trade in the Asian area will reflect strong demand for capital goods as a fast growing region of the world in the future.

However, since the level of imports seems to reflect the export power and foreign currency acquiring power of each country in the area, there will be various differences

in the trends and performances of each nation. Therefore, a uniform expansion envisioned up to 1981 is diminishing.

A bright outlook for the future is that liquefied natural gas exports, mainly from oil-producing nations toward Japan are expected to develop on a full scale basis.

Trade with China

Customs Clearance Statistics reveal that Sino-Japanese two-way trade during the first half of 1982 marked \$4.46 billion or down 13.6 percent from the corresponding period of the preceding year. It was the first time since the second half of 1976 that trade toward China decreased during the first six-month period.

Exports showed a sharp drop to \$1.76 billion in trade with China or down 37.2 percent from the previous year while imports recorded a 14.1 percent increase amounting to \$2.76 billion. As a result, the balance of trade has turned from Japan's export excess amounting to \$423.5

million to an excess of imports amounting to \$950.5 million.

It is expected that Sino-Japanese trade during the whole year of 1982 will remain on the same level as the first half of the year for imports while there are no encouraging signs for rapid growth of exports.

Therefore, if the present pace persists, it is predicted that two-way trade between the two countries will settle at around \$9 billion during fiscal 1982. ■

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ECONOMIC

BUSINESS CLIMATE SURROUNDING ASEAN COUNTRIES

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[Article by Nobuo Kobayashi*: "The Business Climate Surrounding ASEAN Countries"]

[Text] *General Climate in ASEAN*

The expansive keynote of Asian countries' trade has neared close to a turnabout. Their export growth, which had led their trade development, began to slow down in 1981. Furthermore, the slowdown has been growing visible since the turn of the year.

The solution of the so-called second oil crisis in 1979-80 seems fundamentally different from that of the first oil crisis in 1973. Such keynote change is naturally being reflected in trade between Japan and other Asian nations.

At an enlarged foreign ministers' meeting of the Association of Southeast Asian Nations (ASEAN) in Singapore on June 14, 1982, the ASEAN members requested Japan and other developed countries to open their markets wider to ASEAN products. Toward future international conferences, including a ministerial meeting of the General Agreement on Tariffs and Trade (GATT) this autumn, developing countries would increasingly seek North-South dialogue on trade issues. Such requests would surface at a number of economic and trade conferences between Japan and ASEAN countries taking place in Japan in the near future. The recent Asian trade is analyzed according to

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some key points as follows:

Export Growth Slowdown Surfacing

The most conspicuous keynote change in Asian trade in 1981 was a sharp decline in export growth. Asian developing nations, which have so far achieved economic expansion thanks to increasing exports, are seriously concerned about the change.

Seven major Asian developing nations' annual export growth from 1976 to 1980 averaged as high as 27 percent as shown in Table 1. But their exports in 1981 indicated a notable change from the past five years.

None of them posted larger export growth than the five-year average. Only South Korea scored higher growth than in 1980.

Their exports in 1981 are characterized by the following features:

Newly industrializing countries (NICs) scored some export growth over 1980. But the growth was far lower than the past level of 30 percent or more. South Korea in a recovery period recorded a 20 percent-level export rise. However, this is attributable primarily to increased domestic inventory which naturally led to an export drive.

Furthermore, growing margin trading between companies' head and branch offices caused problems frequently in that country.

Singapore, one of NICs as well as the ASEAN members, in 1981 chalked up the first single-digit export growth since 1975.

Four other ASEAN nations saw larger changes in their exports. Export growth of Thailand and Indonesia stood at the one percent level. Thus their exports in 1981 were held down to almost the same amount as in 1980. Malaysia, whose per capita gross national product exceeded that of South Korea in 1980, posted an 8.7 percent export decline in 1981 on a customs-cleared ringgit basis. In terms of U.S. dollars, as Table 1 shows, Malaysia's exports suffered a larger decline because of the Malaysian ringgit's depreciation against the U.S. dollar. Malaysia's average annual

export growth for 1976-80 stood 30 percent above, the second highest after that of Singapore. Coupled with price stability described as mythical, the high export growth supported that country's smooth economic expansion. In 1981, its trade balance turned unfavorable for the first time in 12 years.

The Philippines' exports in 1981 showed a 1.1 percent decline from 1980, the first fall in six years, although its nontraditional exports, subjected to special overseas sales promotion, surged ahead by about 20 percent.

It should be pointed out that the slowdown or the standstill of export growth is becoming increasingly visible in 1982. At a time when these countries' statistics for the first eight months of 1982 are available, it may be premature to foresee the trend of the whole of the year.

But this year's export growth slowdown or standstill is worthy of consideration. In this respect, we touch upon the 1982 export trend. As indicated by Table 2, the export growth pace is continuing to slacken. Some of these countries are seeing even drops. Asian NICs' exports managed to score single-digit increases as far as the first quarter is concerned. Among four ASEAN countries, excluding Singapore, only Thailand scored an exceptional double-digit rise of 16.9 percent from a year before. But other ASEAN members are seeing their exports in a downtrend as in 1981.

Efforts to Vitalize External Competitiveness

As shown in Table 2, these Asian nations' imports are not so slack as exports. The steady demand for imports is based on requirements for more job opportunities. These countries accelerated development consciousness in the latter half of the 1970s. Younger people at the age of 15 or less account for more than 40 percent of the total population in most of these countries. Thus they are required to promote development at a steady pace in order to create jobs for the new workforce. Thus a firm undertone of import demand exists in these nations.

Table 1 Export Trends of Asian Countries

(Unit: US\$100 million, %)

Year Country	1977	1978	1979	1980	1981	Average Increase Ratio during 1975-1980 period
South Korea	100 (23.5)	127 (27.0)	151 (18.9)	175 (15.9)	213 (21.7)	28.8
Hong Kong	96 (12.9)	115 (19.8)	152 (32.2)	197 (29.6)	218 (10.7)	27.3
Singapore	77 (26.2)	101 (31.2)	142 (40.6)	194 (36.6)	208 (7.2)	31.3
Malaysia	60 (15.4)	74 (23.3)	111 (50.0)	127 (14.4)	112 (Δ12.0)	30.0
Philippines	30 (20.0)	34 (13.3)	46 (35.3)	57 (23.9)	57 (Δ1.1)	21.2
Thailand	34 (17.2)	41 (20.6)	53 (29.3)	68 (28.3)	69 (1.5)	26.7
Indonesia	108 (27.1)	116 (7.4)	156 (34.5)	219 (40.4)	223 (1.8)	25.8

Note: Figures in parentheses show comparison with previous year.

Source: Compiled from various trade statistics in each country, IMF's "IFS" and ADB's "Key indicators"

The steady import increase, coupled with the export growth slowdown, would force these nations to devise effective utilization and introduction of foreign currencies. They would be required increasingly to depend on guidelines of the World Bank, the International Monetary Fund (IMF) and other international organizations for such issues as foreign reserves operation, and development strategy as a whole in accordance with instructions or recommendations by such organizations.

Factors behind the import increase include a sharp rise in payments for oil imports and growing purchases of development equipment and durable goods. Another important factor may be the guidance of international organizations which led these countries to keep away in principle from imposing drastic import restrictions based on the external payments reasons.

Therefore, these nations would make even greater efforts to acquire development funds, especially foreign currencies for procuring goods for economic management. Since the second oil crisis, however, these Asian nations have been faced with difficulties which are fundamentally different from those just after the first oil crisis.

After the first oil crisis, prices of primary products, leading export items of developing Asian nations, increased along with oil prices, enabling them to use rising export revenue for offsetting part of swollen payments for oil purchases. They did not have to revise their development pace downward. But the situation after the second oil crisis is different. Prices of world market commodities, such as rubber, palm oil, coconut oil, other vegetable oils, timber, tin and copper, have been slackening. Furthermore, crude oil prices has been weakening amid a worldwide oil glut.

Behind the slumping international commodity prices is a delay in economic recovery of industrialized countries. The delay has also affected economic development of NICs, which has gone ahead with industrial reorganization to promote production of manufactures, especially those with higher value added. In 1981, individual export items' slackening trend began to affect the value of their overall exports.

Out of the five ASEAN countries, Singapore may be classified as an NIC. To compare exports of the four other ASEAN nations with those of four NICs — Hong Kong, Taiwan, South Korea and Singapore, the ASEAN group's export slowdown turns out to be more serious than that of the NIC group. In 1981, the four ASEAN nations posted a 1.3 percent decline from the previous year in exports. But the NIC group scored a 13 percent increase.

The contrast has stemmed partly from the two groups' difference in export destinations. In 1981, the four ASEAN countries depended on Japan and the United States for as much as 66 percent of their exports — 41 percent for Japan and 25 percent for the United States. In stark contrast, the NIC group destined 36 percent of exports to the two industrialized countries. Thanks to diversification of export destinations, the NIC group could afford to increase exports to other areas than Japan and the United States.

A noteworthy move in these Asian countries in 1982 is the control on wage hikes. They make it a basic policy to put a control on wages after high growth in the latter half of the 1970s.

For example, South Korea held nominal annual wage growth in 1981 to 14 to 15 percent, compared with the 30 percent level for the previous three years. In 1982, the Federation of Korean's Industries is reportedly expecting the wage growth somewhere around seven percent or less. This almost the same case with Singapore which has stepped up industrial transformation, or a shift to the high added value industry, by achieving annual wage growth of 20 percent for three years on end. Most of Singaporean private sectors forecast that a nominal wage hike in 1982 will be held down to around 10 percent, although it would depend on improvement of productivity. In fact, Singapore's National Wage Council re-

Table 2· Increase Ratio of Exports & Imports in 1982

(increase ratio over the same period of previous year, %)

Country	Exports	Imports
Hong Kong (Jan.-Mar.)	9.9	7.5
Korea (Jan.-Mar.)	7.9	3.9*
Singapore (Jan.-Apr.)	2.8	5.5
Thailand (Jan.-May)	16.9	△10.1
Philippines (Jan.-Mar.)**	△15.3	4.4
Malaysia (Jan.-Feb.)	△11.6	7.5
Indonesia (Jan.-Mar.)	△ 5.1	32.4

Note: * The import figure includes the Jan.-May period

** Figures of International Payments, Customs Clearance Statistics, etc. are not available.

Source: JETRO Overseas Office

commended a wage hike of 5.75 to 9.75 percent in June 1982. In Hong Kong, a 1982 wage increase is expected to decline from the 20 percent level in 1980 and 1981 to just below 14 percent in terms of manufacturing industries' nominal average wages. Major Japanese trading houses estimate Hong Kong's wage hike in 1982 at the 17 percent level.

The four ASEAN countries revise wages mostly in June or October every year. Malaysia expects

that wage increases in 1982 would slacken from 15 to 30 percent in 1981 to 10 to 20 percent. In Indonesia, wage hikes in 1982 in case of Japanese affiliated firms are expected to be held down mostly to 15 to 20 percent. As Thailand raised minimum wages by 13 to 14 percent in October 1981, most of Thai companies increased wages by almost the same margin. However in 1982, some Thai firms intend to increase wages by around five percent, expecting hikes of minimum wages to be lower than in 1981. Philippine firms have so far revised wages based on compulsory minimum wages given in the presidential decree somewhere around June every year. In 1982, however, the Philippine government reportedly intends to give up revision of minimum wages.

Japan Scores Rare Trade Surplus with Asia

Japan's exports to Asian nations in 1981 rose 11.3 percent from 1980 to 34.4 billion dollars, while imports from them increased 0.5 percent to 31.9 billion dollars. The year 1981 was characterized by a large shift in Japan's trade balance with these countries. The shift was from a long-lasting import surplus to the direction of equilibrium. Specifically, Japan's trade with the region posted an export excess of 2.5 billion dollars in 1981 after an import excess of about 800 million dollars in 1980. But Japan-Asia trade's share of Japan's overall external trade value remained almost unchanged at 22.3 percent.

To break down the 1981 trade by area, Japan's exports to South Korea, Hong Kong and Taiwan increased 7.2 percent from the previous year to 16.37 billion dollars. Imports from them surged ahead 12.3 percent to 6.58 billion dollars. Trade with Hong Kong was comparatively active with both exports and imports scoring growth of the 10 percent level. Japan's exports to and imports from Taiwan chalked up single-digit increases, however. In February 1982, Taiwan banned imports of about 2,500 consumer items from Japan. In trade with South Korea, imports increased far faster than exports. Imports from

that country scored a 13.1 percent increase, compared with an export rise of 5.3 percent.

In Japan's exports to these three newly industrializing nations, capital goods, including parts, and raw materials captured a prevailing share. This has become a definite pattern. But it is noteworthy that Japan's exports of light industry products to them showed a large 12 percent increase in 1981, centering on textiles bound for Hong Kong. Among imports, fish and fish preparations from South Korea and Taiwan, and steel and electric machinery from South Korea recorded notable increases.

As for the five ASEAN countries, Japan's exports continued to rise, chalking up 14 to 19 percent gains. But changes in imports were mixed. Only imports from Singapore showed an increase in 1981. They gained 28.9 percent, centering on petroleum products. Imports from Indonesia leveled off. Those from the other three nations declined. Purchases from Malaysia fell 10 percent, those from the Philippines 15 percent, and those from Thailand 5.2 percent.

Reflecting such trade changes, some ASEAN countries began to watch their trade balance more carefully. As for the Philippines, it also posted a trade deficit with Japan in 1981 after recording a surplus in 1981 for the first time in five years. Furthermore, Malaysia reported the first trade deficit with Japan in 20 years. Although Japan structurally records a trade deficit with the whole of ASEAN, a 1981 deficit fell 30 percent from 1980 to 5.8 billion dollars.

Japan's exports to Southwest Asia in 1981 gained 12.4 percent over 1980 to 2.6 billion dollars, while imports rose four percent to 1.4 billion dollars. Exports to India and Burma increased smoothly, centering on oil development equipment. But growth in exports to Bangladesh and Sri Lanka showed a setback from a large increase in 1981. Japan scored trade surpluses with all of Southwest Asian countries in 1981. India posted a deficit after continuing a surplus from 1966 to 1980.

*Growing Calls for Japan's More Tropical and
Manufactured Goods Imports*

Since the beginning of 1982, the keynote change which appeared in Japan's Asian trade in 1981 has grown more conspicuous. In the first eight months of 1982, Japan's exports to the Asian region declined 7.7 percent from a year before and imports from the region also declined 4.4 percent. Trade with all nations in the region has failed to achieve the past concerted expansion. There has been a growing gap between these countries in changes in trade with Japan.

Japan's exports to all NICs have been decreasing faster than those to the ASEAN countries. In stark contrast, exports to Southwest Asia have been scoring a notable increase, centering on those to India and Pakistan.

Japan's imports from the Asian region have been keeping a-year-before levels in the first half of 1982, indicating the nation's steady purchase efforts or steady demand for products of the region. For example, as shown in Table 3, Japan's purchases have served to prevent a sharp decline in Indonesia's exports. Because of the so-called counterpurchase trade which was newly introduced in late 1981 to step up exports, Indonesia's non-oil exports in the first quarter of this year reportedly declined by some 30 percent from a year before. The implementation of the system has caused problems which are constraining Indonesian exports.

The counterpurchase trade of Indonesia calls on its trading partners to purchase Indonesian primary products in return for their exports to Indonesia. To explain specifically, foreign exporters, which conclude more-than-500 million-rupiah (800,000 U.S. dollars) contracts with the Indonesian government or state-run corporations for exports of materials or plants, will be obligated to buy Indonesian primary products other than oil in proportion to the contract value. Indonesian products subject to the counterpurchase may include rubber, coffee, white pepper, black pepper, tobacco leaves, casaba, cement, lumber,

Table 3 Japan's Trade with Asian Countries during Jan.-Aug., 1982

(unit: US\$ million)

Country	Exports			Imports		
	1981 (Jan.-Aug.) Amount	1982 (Jan.-Aug.)		1981 (Jan.-Aug.) Amount	1982 (Jan.-Aug.)	
		Amount	IR (%)		Amount	IR (%)
NICs Total	11,101	9,264	△16.6	4,071	4,281	5.2
Hong Kong	3,555	3,189	△10.3	407	393	△ 3.5
Taiwan	3,670	2,884	△21.4	1,643	1,703	3.7
South Korea	3,876	3,191	△17.7	2,021	2,185	8.1
ASEAN Total	10,037	9,814	△ 2.2	14,168	13,295	△ 6.2
Indonesia	2,677	2,829	5.7	9,127	8,246	△ 9.7
Malaysia	1,661	1,634	△ 1.6	1,913	1,971	3.0
Singapore	2,925	2,943	0.6	1,177	1,228	4.3
Thailand	1,534	1,187	△ 22.6	717	736	2.7
Philippines	1,239	1,219	△ 1.6	1,232	1,112	△ 9.7
Southwest Asia Total	1,503	1,725	14.8	915	985	7.6
India	738	970	31.4	708	770	8.7
Pakistan	399	496	24.2	151	146	△ 2.8
Sri Lanka	168	133	△21.2	40	44	9.6
Bangladesh	198	126	△36.2	16	25	54.0
Asia Total	22,948	21,183	△ 7.7	21,278	20,332	△ 4.4

Note: IR indicates Increase Ratio over the same period of previous year.

Source: JETRO

plywood, other wooden products, textiles, aluminum, basketworks, bauxite, biscuit, canned fishes, canned fruits and vegetables, cigars, clove tobacco, coffee powder, perfume, fruit juice, glass, granite, nickel, paper, bar steel, wisteria mats, wisteria furniture, tires, asbestos cement, canned corn beef, and tuna. Most of leading trade partners of Indonesia are wondering how they should cope with the counterpurchase system.

A number of government- and private-level meetings between Japan and other Asian nations are scheduled to take place in Japan in 1982. At the second joint executive meeting of the ASEAN-Japan Economic Council in Tokyo in April, ASEAN delegates to the working party on trade

argued that Japan should consider a framework corresponding to a plan which the United States proposed in 1981 for promotion of trade specifically with Caribbean countries. The council's plenary meeting is scheduled for Dec. 10-12, 1982, in Manila. In fact, at an enlarged foreign ministers' meeting of ASEAN in Singapore in June, the ASEAN side asked Japan to take ASEAN tropical and manufactured goods into account more positively in implementing its second package of market-opening measures given in late May.

Most of Asian nations are revising their economic growth projections downward for 1982. The latest projections for the year have been modified lower and lower. As of the September 1982, projected economic growth rate in real terms are 6.3 percent for Hong Kong, 5.5 - 6.5 percent for South Korea, 7 - 8 percent for Singapore, 6.7 - 7 percent for Thailand, 4.1 percent for the Philippines, 4.5 - 5 percent for Malaysia and 6.5 percent for Indonesia. Singapore has also revised its original projection in the third quarter.

These Asian nations are still classified as a growth region if compared with the other part of the world. They have not lost growth potential yet. At a time when their economies enter an adjustment period, however, they are expected to increasingly call for trade cooperation with industrialized nations rather than for assistance from them which was sought especially in 1973-75. They would growingly request industrialized countries, especially upon their largest trading partner to open its market wider to their products. ■

CSO: 4100/076

ECONOMIC

DEVELOPMENT OF SMALL, MEDIUM ENTERPRISES IN ASEAN COUNTRIES

Tokyo DJIT in English No 177, 1982 pp 23-26

[Article by Fusae Kishida*: "Japan's Cooperation in Fostering Small & Medium Enterprises in ASEAN Countries"]

[Text]

General Attitude

Amid the continuing global economic stagnancy in the 1980s, there is a growing recognition in various countries on the importance of promoting small and medium businesses. Many developing nations have been trying to correct differences between cities and farm villages, develop regional and farming areas, correct industrial imbalances and adjust income gaps between different racial groups. These are basic and important tasks for developing countries. From this viewpoint, the promotion of small and medium enterprises has been considered as an important pillar more than in the past.

The advanced countries have also taken high interests in small and medium businesses. For example, the EC has designated 1983 as "Small Firms Year" to be "the first year of promoting small and medium enterprises."

In this manner, not only developing countries but advanced countries have recognized promotion of small and medium businesses as an important task. In all countries, the small and medium businesses form a social majority of the domestic economy and absorb the majority of employment. It seems that the important

*International Affairs Office, Trade & Wholesale Div., Small and Medium Enterprise Agency, MITI.

role of small businesses was recognized again because of present stagnant economic era.

In order to escape from present economic conditions, advanced countries must revitalize their economies and developing nations must achieve a take-off toward balanced economic development. In other words, each country cannot ignore the important role of small and medium businesses.

*Developing Small and Medium Enterprises
in ASEAN Countries*

In September 1980, the then Minister of International Trade and Industry Mr. R. Tanaka and in January 1981, Prime Minister Suzuki visited ASEAN countries. At that time Japan promised to cooperate in energy development, farm community development and expansion of manufactured goods exports as well as promoting the growth of small and medium businesses. Since the beginning of the 1980s, ASEAN countries have started to make more efforts in the growth of local small and medium businesses.

In a word, ASEAN countries consist of five countries with differing stages of economic development and economic structure. They have their own differences even in the understanding toward developing small and medium businesses.

In the case of Singapore, it is located as an important financial, insurance, shipping and tourist center and its standard of living has reached a level which is almost equal to the advanced countries.

Since Singapore is aiming at a shift toward a high value-added industry as a major premise in "free competition," the Government does not have a conspicuous small and medium business promotion policy. In the process of moving toward high value-added products it is hoped that business activities will be accomplished by the spontaneous growth of supporting industries.

On the other hand, Indonesia which has to support a large population, face a big need to correct employment and income gaps. Therefore,

the Government is expected to take measures toward regional industrialization and foster the growth of local small and medium businesses even at the sacrifice to a certain extent of economic efficiency.

In this manner, there are some differences among the five countries but overall, the development of local small and medium businesses has become an important development strategy for ASEAN nations in the 1980s. Since Japan has won high global praise in this field, ASEAN countries are expected to make efforts to build up and strengthen their small business foundation by learning from the Japanese promotion policy, institutional system, etc., with the cooperation of this country.

In developing their small and medium businesses in the future, ASEAN countries are expected to take the following two courses in the industrial sector from the policy viewpoint.

The first sector is the dispersal of factories to underdeveloped or rural farm areas. In order to realize this policy goal, it will be necessary to promote development of small-scale industries such as the farm and fishery processing industry, textile fabrics, traditional craft products and woodwork products.

It is necessary for the government to provide positive assistance in the fields of manpower, financial aid, technology and information. Especially important in this field is to implant in the businesses the need for thinking in terms of production and management knowhow on the basis of a modern entrepreneur spirit and market economy.

The second sector is the fostering of supporting industries to provide parts and semi-finished products toward sub-contractors or related industries of basic industries in the industrial areas and their vicinity. In order to achieve this goal, it is necessary to foster the growth of an industry for forming materials such as casting, forging, pressing work and powder metallurgy. The greatest bottleneck in this case is the low level of technical standards.

Japan should respond to the course mentioned

above to foster the growth of small and medium businesses in ASEAN countries. The three main points of Japanese cooperation are mentioned below.

Positive Cooperation in "Human Resource Development"

Prime Minister Suzuki and former MITI Minister Tanaka promised Japan's economic cooperation when they visited ASEAN countries. The pillar of their cooperation to promote the growth of small and medium businesses is "human resource development." In the past, there have been projects in which Japanese specialists were sent to ASEAN countries and they have won high praise. But "human resource development" centers on providing training for diffusion in the fields of vocational training, management knowhow, etc., in order to improve the skill and technical ability of individual workers. In order to achieve these goals, Japan is cooperating by establishing training facilities, including necessary machinery and equipment.

The basic requirement for a business in carrying out production activities is to acquire necessary technology. In order to aim at constant improvement of productivity, it is necessary to carry out technical improvement and innovation. In this sense, there is no need to say that the so-called vocational training forms the foundation of "human resource development."

But it is equally important or even more important to train entrepreneurs. Even if the skill and technical ability of individual worker are improved through vocational training, business activities cannot improve without the "entrepreneur" who can realize individual productivity improvements as a productivity improvement on the business level. This is a big premise for the market economy society and we tend to lose sight of this big premise.

In fact, this writer feels that the past cooperation for training talents has been prone to vocational training.

The entrepreneur mentioned here means an executive or administrator who is clearly cognizant of maintaining and developing an enterprise as well as a person who has acquired such know-how as sales expansion, fund-raising and personnel education.

Vocational training and entrepreneur education can be considered as the so-called "hardware" and "software" in terms of "human resource development."

Lack of either element would result in a failure in "human resource development" necessary for the promotion of small and medium businesses.

In this regard, it is the Center for Vocational Training and Extension Service Training that is being set up in an attempt to attain both goals which are considered as the two wheels of a vehicle.

This project is still at a stage of feasibility study but for the coming five years, the schedule calls for training of vocational trainers and small industry promoters (management technique instructors).

It is strongly hoped that Japanese measures and cooperation will focus on this type of "human resource development" in the future.

***Smoother Overseas Investment by
Small and Medium Businesses***

It is insufficient for domestic policies alone to carry out promotion of small and medium businesses in developing nations and at the same time, it is essential to encourage technology transfer by accepting investment from overseas small and medium businesses.

Since ASEAN nations have so far been extremely enthusiastic about inviting investment by Japanese small and medium businesses, the Small and Medium Enterprise Agency, MITI external bureau, and Japan Small Business Corporation, a government agency, have been exercising a project to soothen overseas investments by small businesses since fiscal 1981.

The project mainly aims at providing small enterprise businessmen with information relating

to overseas investments and education of overseas service personnel.

On the problem of providing information, there is a system where various information relating to overseas investments (including changes in foreign capital policy or investment proceedings) is gathered and offered while "overseas investment advisors" who have been registered to the Corporation are providing small enterprises with practical and concrete advices at their request.

For talent development, a training program on investment climate and related practices in the host countries is being carried out mainly for the management of small businesses.

The above projects are now under way and need to be expanded in the future. In such a case, it is necessary to pay attention to the following two points:

The first point is the importance for Japanese enterprises abroad to settle down in their respective locales in order to make Japanese small business advancement contribute to promotion of their counterparts in host countries.

In this regard, it is inevitable to study and carry out various projects not only necessary for smoothening overseas advancement but also settling down in the locales.

The second point pertains to a necessity to study financial assistance measures. Small and medium enterprises have been complaining of difficulties in raising funds not only for overseas advancement but for business operation.

Although this somewhat relates to the first point, we should take heed to the fact that raising funds constitutes a grave bottleneck in smoothening overseas advancement of small businesses and their settlement in local areas.

Diffusion of Japanese Small Business Policy

There has been a movement in ASEAN countries to establish a bureau in charge of small businesses in their governments and to consolidate the base for promotion of small and medium enterprises. (Indonesian Directorate General of

Small Scale Industries in the Department of Industry since January 1979; Malaysian Small and Medium Scale Industry Division in the Ministry of Trade and Industry since June 1981 and Philippines Bureau of Small and Medium Scale Industries in the Ministry of Trade and Industry Since July 1981).

Compared with Japan, their policies are still inadequate and lack accumulation of knowhow.

Under these circumstances, the Small and Medium Enterprise Agency is planning to hold the International Conference for Small Business Policy (INCOSEP, commonly called "Small Business Summit") in Osaka in January 1983.

At this conference, ministers in charge of small business policy will gather from various countries including ASEAN nations in order to exchange information and views concerning small business policy. The conference can be considered as a good opportunity for Japan to exercise part of its cooperation toward developing nations through diffusion of Japanese small business policy.

It will be necessary to contribute to furtherance of small enterprise policy through bilateral meetings and acceptance of trainees in the future. But high hopes are being placed on the results of the forthcoming INCOSEP since it is the first time that such a large-scale international meeting will be held. ■

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ECONOMIC

ASEAN NATIONS CAN LEARN FROM JAPAN'S SMALL BUSINESS DEVELOPMENT

Tokyo DJIT in English No 177, 1982, pp 31-34

[Article by Muneo Takashi*: "What Can Learn from Japan's Local Businesses"]

[Text]

Japan Starts Cooperation in ASEAN's Development of Small Businesses

The five ASEAN (Association of Southeast Asian Nations) differ in history, culture, race and society. Their economic development mechanisms are also different. But all the five nations have adopted the development of local small businesses as a common priority task for the 1980s. The Japanese government, which has given foreign policy priority to cooperation in economic and social development of the ASEAN countries, proposed cooperating as much as possible in promoting ASEAN's small businesses on the occasions of the then International Trade and Industry Minister's Asian tour in September 1980 and Prime Minister Zenko Suzuki's ASEAN visit in January 1981. Japanese small businesses are well reputed internationally for their good performance. Therefore, ASEAN apparently places great expectations on Japan's such cooperation.

Japan's cooperation in ASEAN's development of small businesses is part of the Japan External Trade Organization's (JETRO) program started in fiscal 1982 (beginning last April) for cooperation in developing nations' trade and industry promotion. The program covers not only promotion of

*Import Second Div., Import Dept., Japan External Trade Organization (JETRO)

local small businesses but also development of manufactured goods exports and technical guidance involving energy. The local small businesses promotion project is launched for some of ASEAN countries. For example, JETRO is implementing local seminars and consultation service

for producers of automobile, motorcycle and electric parts in Indonesia and for producers of processed agricultural products and frozen or canned sea foods in Thailand.

The project is not subject to this article, however. This article is designed to give ASEAN nations useful data on promotion of small businesses by analyzing Japanese local businesses on the basis of specific examples to indicate reasons why they have been able to continue successful performance.

*Characteristics of Local Business and
their Application to ASEAN Nations*

Needless to say, "local" businesses differ conceptually from "small" businesses in Japan. Prof. Tadao Kiyonari of Hosei University divides Japan's small businesses into four categories:

- (1) regional businesses,
- (2) local businesses,
- (3) subcontractors of big businesses, and
- (4) others.

Thus, local businesses can be considered as one category of small businesses. Of the four categories, the first one include retail, consumer service and food production firms serving regional markets. The fourth category includes, for example, an independent small company which has branches at various areas. Small businesses which ASEAN nations may promote primarily are believed to belong mainly to the second and third categories.

Hereafter, the second category, or "local businesses," is subjected to consideration. Local businesses in Japan are generally defined as small businesses of a single industrial category located intensively at a certain area. Most of such businesses feature a long history originating in the 17th-19th centuries. They are also characterized by

a multi-layer labor division setup involving both production and sales, intensive labor, production of consumer goods peculiar to location areas, a comparatively high ratio of exports to total sales, and other features. Typical products of local businesses include toys, bags, sacks and cigarette lighters in Tokyo; scarfs in Yokohama; metallic tableware in Tsubame City, Niigata Prefecture; cutlery in Seki City, Gifu Prefecture; spectacle frames in Sabae City, Fukui Prefecture; ceramic ware in Aichi, Gifu and Mie Prefectures; furniture in Shizuoka Prefecture; gloves in Shiratori City, Kagawa Prefecture; towels in Imabari City, Ehime Prefecture; and lacquered ware in various areas of Japan.

What ASEAN nations can learn from Japan's local businesses for developing their small businesses?

Local businesses' features mentioned above include products peculiar to location areas. Such products are made of or from locally-gained materials, including clay for ceramic ware, or through local knowhow, such as peculiar processes for lacquered ware. In this respect, ASEAN nations other than Singapore are rich with such primary products as timber, rubber and tin. Therefore, they should consider businesses to process primary products turned out abundantly in certain areas. They also should utilize peculiar manufacturing processes, if any. If without such processes, they should learn such processes from technical experts dispatched from regions producing corresponding goods in Japan.

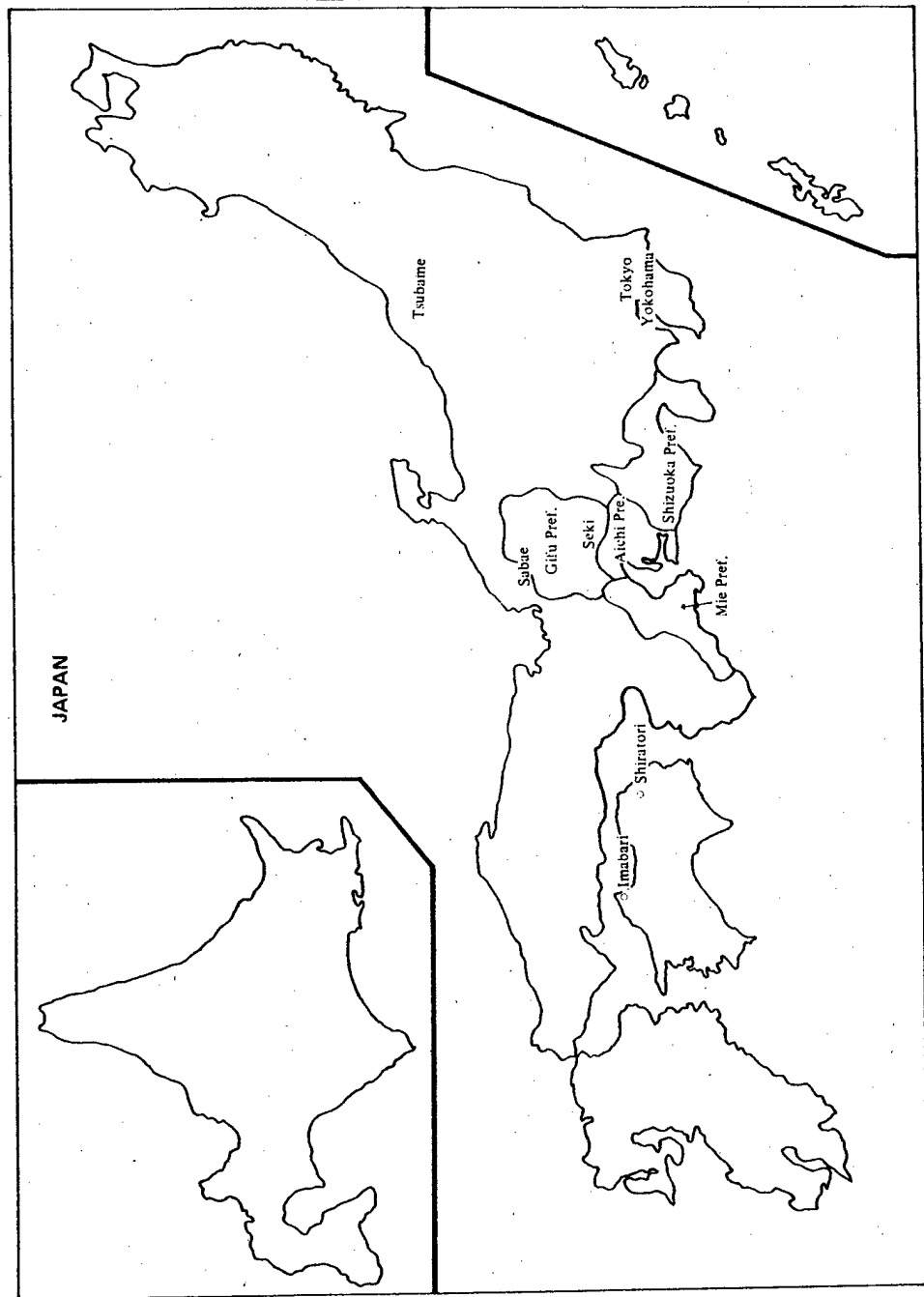
Japanese local businesses' features also include the multi-layer labor division setup. In case of Tokyo's toy industry, for example, businesses which are considered as toy manufacturers by consumers are, in fact, "commission houses" which undertake only planning and marketing of products while commissioning subcontractors or other manufacturers to turn out the products. This is the same case with the cigarette lighter industry in Tokyo. Cigarette lighter manufacturers take charge of final assembling, testing and packaging of products in addition to products

planning and marketing. Other manufacturing processes are undertaken by subcontractors. For example, a cigarette lighter manufacturer orders lighting devices from A, cases from B and case plating service from C. Such division of labor for toy and lighter production benefits both principal manufacturers and their subcontractors. Principal manufacturers can keep away from investing much money in production equipment and have subcontractors compete so that higher-quality products are manufactured at lower costs. Subcontractors are free from risks involving development and marketing of new products.

Distribution channels are also divided. Wholesalers and other distributors of different stages mediate between manufacturers and retailers. But such intermediate distributors are being rationalized. The division of labor in production and distribution may amount to a flexible industrial

structure for dispersing various business risks. This structure has been formed through a long history of local businesses' development. Therefore, it would be difficult for ASEAN nations to set up such structure domestically in a short time. What ASEAN industrialists should learn from the labor division setup of Japanese local businesses may be friendly human relationship between principal manufacturers and their subcontractors or between different kinds of distributors, and fine entrepreneurship pursuing long-term business strategy rather than short-term capital recovery.

While principal manufacturers and their subcontractors in Japan's local industries are taking advantage of each other, they are usually united closely through firm partnership or trust. Although a principal manufacturer can have subcontractors compete with each other, its business relations with a subcontractor, once established, are not severed so easily. It rarely switch to another subcontractor. Principal manufacturers sometimes lend subcontractors operating funds even at cost of temporary gains. In order to meet the trust of principal manufacturers, subcontractors



secure full quality control for products for delivery to them, observe delivery dates strictly and strive to rationalize production processes. The similar relationship exists between different

kinds of distributors. Thus, Japanese local businesses acknowledge that they can benefit much from such relationship in a long run even though with little earning gained temporarily.

Industrialists in such Japanese local industries can be called businessmen with fine entrepreneurship. ASEAN governments should prepare economic and social circumstances to produce such industrialists easily. Specifically, they should expand educational institutions to train quality employers, engineers and laborers. They also should improve infrastructure, stabilize currency value and institutionalize long-term, low-interest loans for small businesses. ■

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ECONOMIC

SMALL BUSINESSES' OVERSEAS INVESTMENT

Tokyo DJIT in English No 177, 1982, pp 27-30

[Article by Nobuo Kaneko*: "Current Trends of Japanese Small Businesses' Overseas Investment"]

[Text]

Trend of Japanese Small Businesses' Overseas Investments

Japanese small businesses' overseas investments have started full-scale growth since around 1965 and sharply increased in 1970. They reached a peak of about 3.5 billion dollars or 3,093 cases in 1973. Due to an oil crisis in the autumn of 1973 and successive recession, however, such investments remained slack from fiscal 1974 to 1977.

But small businesses' investments abroad began to increase again in fiscal 1978, hitting an all-time high of 4.6 billion dollars (2,395 cases). They rose even further in fiscal 1980, reaching 4.7 billion dollars (2,442 cases).

Japan's private overseas investments after World War II were led mainly by trading houses and big businesses in the first phase, joined by medium-size firms and part of small businesses in the second phase, and characterized by small businesses' positive activity in the third phase.

To follow the trend of Japanese small businesses' overseas investments (see Table 1), they grew faster than Japan's overall investments

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abroad. In terms of cases, small businesses' share of Japan's overseas investments has been rising.

Factors behind small businesses' stepped-up investments abroad apparently include slowdown in Japan's economic growth, which led these businesses to seek business opportunities abroad. Among other factors are difficulties in procuring raw materials, responses to raw material exporting nations' growing hope for export of processed materials, and rising domestic labor costs. Big businesses' overseas investments have also prompted small businesses as their subcontractors to follow suit. Thus small businesses are now required to do business on an international basis.

Breakdown of Small Businesses' Overseas Investments by Destination and Industry

Table 2 shows a breakdown by destination of

Table 1. Ratio of Small Businesses in Total Overseas Investment in Japan

(Unit: case, US\$ million, %)

		Security acquisition		Credit acquisition		Establishment of branch or acquisition of real estates		Total	
		Case	Amount	Case	Amount	Case	Amount	Case	Amount
FY 1974	Small & Medium Firms	439 (38.6)	81	147 (28.6)	46	32 (12.3)	2	618 (32.4)	129 (5.4)
	Whole Firms	1,376	1,262	514	1,098	260	36	1,910	2,396
FY 1976	Small & Medium Firms	404 (45.8)	52	120 (21.5)	46	18 (9.3)	1	542 (33.2)	99 (2.9)
	Whole Firms	882	1,487	557	1,882	193	93	1,652	3,462
FY 1978	Small & Medium Firms	432 (48.6)	92	500 (44.5)	234	287 (75.1)	55	1,219 (50.9)	381 (8.3)
	Whole Firms	889	2,038	1,124	2,383	382	178	2,395	4,599
FY 1980	Small & Medium Firms	436 (55.2)	145	466 (34.5)	596	198 (66.0)	65	1,100 (45.0)	806 (17.2)
	Whole Firms	790	2,295	1,352	2,187	300	210	2,442	4,693

Note: Figures in parentheses indicate composition ratio.

Source: MITI Statistics

small businesses' overseas investments in terms of cases. It indicates the share of investments in three East Asian countries has declined because of

a sharp fall in investments in South Korea, while that of investments in politically-stable other Asian nations as well as North America has doubled. The share for South Korea, Taiwan and Hong Kong dropped from 66.7 percent in fiscal 1980. But that for other Asian nations, including

ASEAN countries, increased to 21.2 percent. The proportion for the whole of Asia has been following a downtrend. In contrast, that for industrialized nations in Europe and North America has been rising.

To break down small businesses' overseas investments by industry (see Table 3), we can find that their investment focus has been shifting from textile and sundry good industries to machinery and food industries.

The shift in terms of both investment destinations and industries may be attributed to changes in the purposes of small businesses' overseas investments. Their past investments were aimed at taking advantage of lower overseas labor costs. But the recent investments are designed for full-scale market exploration. Small businesses are trying to avoid trade frictions with foreign nations by promoting direct investments in them after Japan's increasing exports caused serious friction with importing nations. Their overseas investments are also aimed at information gathering.

*Significance of Small Businesses'
Overseas Investments*

Small businesses' recent overseas investments indicate their investments feature unique significance which is different from that of big businesses' investments. The types of small businesses' investments are:

- 1) local job creation,
- 2) adequate technology transfer,
- 3) investments supplementing big businesses' activity, and
- 4) adequate investment scale.

Job Creation

Small businesses' investments center on labor-intensive industries. Therefore, a certain amount of their investment can create more jobs than the same amount of big businesses' investments. The effective job creation can contribute to solving

Table 2 Security Acquisition of Japanese Small Businesses by Area

(Unit: %)

	1976	1977	1978	1979	1980
Asia	60.7	68.4	70.5	69.7	57.6
South Korea	16.7	19.7	6.3	7.5	6.1
Hong Kong	11.9	7.9	10.7	12.0	9.1
Taiwan	14.3	15.8	19.6	22.6	21.2
Others	17.9	25.0	33.9	27.1	21.2
Developed Countries	32.1	27.6	25.9	25.6	37.4
North America	21.4	21.1	21.4	19.5	31.3
Europe	9.5	5.3	3.6	5.3	6.1
Oceania	1.2	1.3	0.9	0.8	0
Others	7.1	3.9	3.6	5.3	5.1
Latin America	7.1	3.9	2.7	5.3	5.1
Middle East	0	0	0.9	0	0
Africa	0	0	0	0	0
Total	100	100	100	100	100

Source: MITI Statistics

Table 3 Security Acquisition of Japanese Small Businesses by Industry

(unit: %)

	1976	1977	1978	1979	1980
Food	23.8	6.6	8.0	10.5	14.1
Wood & Pulp	2.4	7.9	3.6	2.3	5.0
Textile	4.8	7.9	6.3	6.0	6.1
Chemicals	8.3	10.5	5.4	11.3	7.1
Steel & Non-ferous Metals	9.5	6.6	4.5	7.5	7.1
Machinery	36.9	18.4	47.3	37.6	43.4
Others	14.3	42.1	25.0	24.8	17.2
Total	100	100	100	100	100

Source: MITI Statistics

economic problems facing investment receiving nations and promoting Japan's communication with them.

Adequate Technology Transfer

Developing nations mostly lag behind in economic and social development. Workers in such nations cannot absorb modern advanced technologies smoothly because of their low-level educational and technological standards as well as

lack of industrial infrastructure. Japanese small businesses have assimilated advanced technologies to their own usage. Such assimilated technologies

may be easily accepted by foreign nations, especially developing countries, receiving their investments. Investments by small businesses with such assimilated technologies would effectively meet requirements of investment receiving countries, leading to their technological development.

Investments Supplementing Big Businesses' Activity

In developing countries with limited industrial base, a modern main industry, if introduced quickly, could not work well because of insufficient supply of indispensable materials, parts and maintenance service. These nations, especially ASEAN members, are increasingly hoping for local procurement of parts, materials and service. Japanese small businesses undertaking peripheral industrial areas, including parts and materials supply, are thus required to invest in these countries. Small businesses' overseas investments are significant in this respect.

**Table 4 ASEAN Investments by
Japan's Small & Medium Enterprise
(Capital scale in parent companies)**

	Less than ¥10 million	¥10-30 million	¥30-50 million	¥50-70 million	¥70-100 million	Total
Indonesia	0	1	7	1	3	13
Malaysia	3	2	5	6	4	20
Philippines	1	3	12	0	2	18
Singapore	7	10	11	6	10	44
Thailand	3	6	11	3	5	28
Total	14	22	46	16	23	123

Source: Toyo Keizai Shinposha Japanese multinationals, Facts & Figures.

Adequate Investment Scale

Projects subject to big businesses' investments are generally too large in scale to implement especially in developing countries. But small businesses can invest in smaller, adequate scale. Their positive, adequate investments could effectively contribute to developing countries' economic development. ■

Overseas Investment Adviser System for Small Businesses

Japanese small businesses' overseas investments have increased year by year (see Page 27). The recent years' worldwide recession has forced Japanese small businesses to consider worldwide business strategy whether they like to do so or not.

They now cannot help but seek business opportunities abroad to tide over the recession and vitalize their activity. ASEAN and other foreign nations, which see growth of small businesses as important, have growingly called for Japanese small businesses' investments to develop their own such businesses. However, part of Japanese small businesses' in the past cannot necessarily be described as successful. They are generally less capable of gathering overseas information than large businesses. Their lack of knowledge about overseas markets has frequently caused unnecessary troubles in countries where they have invested. Such troubles could adversely affect investments' original purpose of contributing to economic development of investment receiving nations.

Under these circumstances, the Japanese government established the Overseas Investment Adviser System for small businesses in 1981 to promote small businesses' overseas investments smoothly with full information given to them in advance so that such investments could benefit both investors and investment receiving countries.

Under the system, experts who have ever been engaged in overseas business, are registered as overseas

investment advisers at the Japan Small Business Corporation to give small business investing abroad technical information and knowhow, including:

- (1) Methods for setting up joint ventures in certain foreign countries, joint venture contracts, licensing operations and selection of business partners.
- (2) Construction of plants and offices.
- (3) Labor force, employment, management, etc.
- (4) Financial and tax procedures.
- (5) Overseas business practices and life styles.

The advisers also prepare overseas investment activity manuals and conduct surveys on overseas investment partners in order to supply small businesses with information before their actual investments abroad.

Note: In Japan, small and medium businesses are classified according to the size of company personnel with less than 300 employees (less than 100 employees for wholesale, retail and service sectors).

For further detailed information, please write to
the address below:

**International Business Affairs Office,
Information & Research Dept.
Japan Small Business Corporation
37th Mori Bldg.,
5-1, Toranomon 3-chome,
Minato-ku, Tokyo, Japan 105**

CSO: 4100/078

ECONOMIC

MAJOR TASKS IN SOLVING FOOD PROBLEM OUTLINED

Tokyo KANKAI in Japanese Nov 82 pp 174-178

[Article by Hidero Maki: "Nation's Food Problem"]

[Text] I. Report of the Agricultural Administration Council

On 23 August 1982, the Agricultural Administration Council presented to the minister of agriculture, forestry, and fisheries the report, "Promoting the 'Fundamental Course of the Agricultural Administration for the 80's,' the Council aims to guarantee a healthy, abundant diet and realize a highly productive agricultural industry."

Japan's agricultural industry is meeting its first test, with requests from foreign countries to further open Japan's market for agricultural goods and requests for financial reconstruction and administrative reforms represented in the Interim Administrative Board of Inquiry. Under these circumstances, this report is a guide for promoting agricultural administration. Based on this report, I would say the following about what Japan's agricultural administration should be, focusing on the food problem.

1. Topics and Fundamental Direction of Agricultural Administration in the 80's

Japan's agricultural sector is faced with the problems of:

- (1) A decline in food supply capability, as can be seen in the decline in grain self-sufficiency and in the reduction in farmland.
- (2) A surplus supply of rice and many other agricultural products,
- (3) A stagnation in the expansion of the land-intensive agricultural sectors, such as rice cultivation, and a delay in improving the situation, and
- (4) A decline in the vitality of agricultural society, a reduction in green resources, such as farmlands and forests, and an increase in careless management.

In addition, today's agricultural situation is more severe because:

- (1) Due to stagnation in food demand and a price difference in domestic and foreign products, it is difficult to hope for a rise in the price of agricultural products,
- (2) In line with the request for administrative reform and financial reconstruction, there is also a request for efficient promotion of agricultural administration, and
- (3) Requests from other countries to open the market are still strong, and it is requested that Japan work toward internationalization.

In order to deal with these problems, agricultural administration for the 1980's will try to ensure both the stable supply and safety of food, while making efforts to promote the establishment of a "Japanese diet." The agricultural administration will have to set as its basis the strengthening of Japan's agricultural industry, while trying to guarantee the people a healthy, abundant diet, trying to cultivate and conserve green resources, such as farmland and forests (which account for most of the land), and trying to enhance the vitality of the farming villages.

2. Ensuring the Stable Supply and Safety of Food

Looking at the basis of world food supply and demand from the middle and long-term view, one can see an increase in the population (to 1.5 times the present population by the year 2000), and an increase in the demand for animal products and feed grain. However, focusing on the developing countries, it is expected that pressure and instability will grow since arable land will increase no more than 4 percent by the year 2000. Japan's food supply situation is low, with the weight of domestically-produced food being, on a calories-supplied basis, just over 50 percent (1,340 kilocalories of a total of 2,512 kilocalories supplied), and even if Japan switched to producing potatoes in order to maximize the calorie efficiency, it could only supply the minimum 2,000 kilocalories necessary to sustain daily life (Chart 1).

The policy for guaranteeing the people a stable food supply under these circumstances is:

- (1) To promote the following, in order to try to maintain and strengthen food self-sufficiency:
 - (a) the establishment of a Japanese diet, and stabilization of the supply and demand-for, and price of, staples,
 - (b) the priority development of agricultural production and the guarantee and maintenance of superior farmland,
 - (c) a steady rise in productivity and drop in production costs, and
 - (d) the formation of a vital farming society and the cultivation and conservation of green resources.

Chart 1. Self-Sufficiency of Food (International Comparison) (Unit: percent)

	<u>Japan</u>	<u>West Germany</u>	<u>Britain</u>	<u>France</u>	<u>Swit- zerland</u>	<u>United States</u>
Grain	33	90	77	170	39	162
Table grain	69	106	74	197	53	218
Feed grain	2	81	79	152	29	152
Beans	7	17	81	69	18	142
Vegetables	97	33	79	93	46	99
Fruits	81	41	23	72	62	95
Milk, milk products	86	106	83	110	110	93
Meats (excluding whale meat)	81	86	71	92	89	97
Eggs	98	77	100	97	56	102

(Data) Ministry of Agriculture, Forestry, and Fisheries "Food Supply and Demand Chart"; OECD "Food Consumption Statistics"

- Notes: 1. This is in the case where Japan's self-sufficiency in grain and table grain is premised on a balance in the supply and demand of rice.
2. Japan's information is in FY1980 figures; the other countries' information is in 1978 figures.

(2) To promote the following in order to contribute to the stability of the world's food supply and demand:

(a) the analysis of world food supply and demand trends, and the accurate grasp of forecast and short-term changes in food supply and demand,

(b) active participation in multilateral agreements and international storage, and

(c) agricultural cooperation suited to the needs of the developing countries.

(3) To try to stabilize food imports, Japan will carry out exchanges of information and bilateral agreements based on stable interdependent relations with the major exporting countries.

(4) In order to guarantee storage, the policy will prepare for extraordinary situations, such as a poor domestic harvest, and food import barriers, by storing rice, wheat, soybeans, and feed grain. However, it is important to place emphasis on dealing with the short-term situation (for the long-term situation, the emphasis will be on realizing food self-sufficiency).

3. Guarantee of a Healthy, Abundant Diet

Along with an increase in the level of income and changes in life style, Japan's diet has followed the so-called path of Westernization, with a rise in the calorie level, an increase in animal products and fats, and a decrease in rice and other grains. Japan's income level today ranks with that of the Western developed countries, and compared with these countries, a characteristic diet, a "Japanese diet," is forming. In other words, there is variety, with meats, milk and milk products, eggs, fats, and fruits, added in abundance to the pattern of the traditional diet which is centered around rice, vegetables, fish, and soybeans. A nutritionally balanced, healthy, abundant diet is emerging. Of course, there is a big difference in the make-up of the diet, depending on age, preferences, and region, but judging from the average, the diet has the following characteristics:

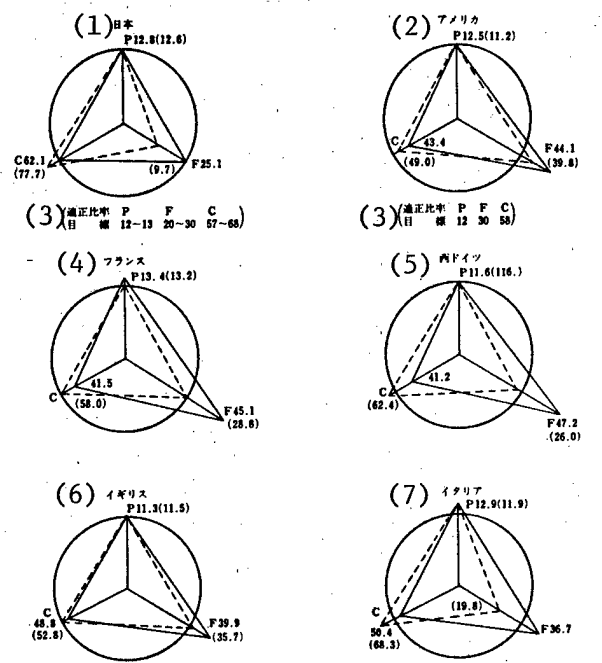
- (1) The level of calories supplied is lower than in the Western developed countries, but, judging from the physique of the Japanese, it has reached a level that should be nearly sufficient (in roughly the last 10 years, the average calories per person per day has changed as much as 2,500 kilocalories),
- (2) The diet is balanced in terms of protein, fat, and carbohydrates (Chart 2), and
- (3) The protein is about half animal, and half vegetable. Nevertheless, the percentage of marine products in the animal portion is high.

Although Japan's distinctive diet is hindered by the expanded import of feed grain, it pivots on food customs that use rice as a staple, and builds on the consumption of agricultural and marine products suited to Japan's natural features. It is therefore possible to develop a desirable diet related to domestic production. Thus it is important to encourage the establishment of that and to strive to promote a comprehensive food policy (Chart 3).

For this purpose, it is necessary to develop an active policy on:

- (1) The comprehensive guarantee of a stable supply of agricultural products corresponding to the food demand, and of their safety. The guarantee of a rise in quality, and the stability of the consumer price, aiming, in the medium and long-range view, at a level as nearly equal to that of the Western countries as possible.
- (2) Making clear the vision of the food industry which is responsible for processed foods and foreign foods, which occupy a large weight in the diet, Promoting an improvement of the technical level, a strengthening of the companies by fostering capable people, systematic maintenance of efficient product distribution and a wholesale market, perfection of quality indicators for processed foods, and the guarantee of food safety.
- (3) Offering comprehensive information regarding diet, such as food supply and demand, quality, price, nutrition, and cooking methods. Widely promoting enlightenment and education of the consumer, and developing a policy aimed at widespread contact between production and consumption.

Chart 2. PFC Calorie Ratio (International Comparison)



————— { 1980 for Japan
 { 1978 for other countries

----- { 1951 for Japan
 { Average of 1948-50 for
 { other countries

{ Circle: Appropriate percentage
 target

{ P: Protein
 { F: Fat
 { C: Carbohydrate

(Data) Ministry of Agriculture, Forestry and Fisheries "Food Supply and Demand Chart"; OECD "Food Consumption Statistics"

- (Note) 1. The Appropriate Percentage Target was calculated from the Ministry of Health and Welfare's "Nutritional Needs of Japanese" (August 1979) for Japan, and is based on the report in the U.S. Senate "Dietary Goals for the United States, Second Edition" (December 1977) for the United States.
2. U.S. Appropriate Percentage Targets were applied for Britain, France, West Germany, and Italy

Key:

- | | |
|------------------------------------|------------------|
| (1) Japan | (4) France |
| (2) America | (5) West Germany |
| (3) (Appropriate Percentage P F C) | (6) Britain |
| | (7) Italy |

Cart 3. Outlook for the Demand for Staples

		FY 1978 (base year)	FY 1990 (Outlook)	
Rice	Total demand (10,000 tons)	1,136	970 -	1,020
	Net food per person (kg)	81.6	63 -	66
Wheat	Total demand (10,000 tons)	586		641
	Net food per person (kg)	31.7		32
Barley, Rye	Total demand (10,000 tons)	238		348
	Net food per person (kg)	0.7		0.4
Soybeans	Total demand (10,000 tons)	419	520 -	543
	(Food portion) (10,000 tons)	(61)		(69)
	Net food per person (kg)	5.3		5.4
Vegetables	Total demand (10,000 tons)	1,686		1,826
	Net food per person (kg)	114.9		114
Fruits	Total demand (10,000 tons)	797		935
	Net food per person (kg)	41.1		44
Milk, milk products	Total demand (10,000 tons)	701	927 -	972
	Net food per person (kg)	59.3	71 -	75
	Beverage portion (kg)	32.7	42 -	44
	Milk products	26.6	29 -	31
Meats	Total demand (10,000 tons)	347	473 -	503
	Net food per person (kg)	20.8	26 -	28
Eggs	Total demand (10,000 tons)	204	225	225
	Net food per person (kg)	14.9		15
Sugar	Total demand (10,000 tons)	292		321
	Net food per person (kg)	24.8		25
Seafood	Total demand (10,000 tons)	1,190		1,396
	Net food per person (kg)	35.5		40
Seaweed	Total demand (10,000 tons)	17		24
	Net food per person (kg)	1.2		1.6

(Data) "Long-Term Outlook for the Demand for and Production of Marine Products"
(7 November 1980 Cabinet Decision), Attached Reference Data

(Notes) 1. With regard to the outlook for demand, (1) the growth of private consumption expenditures (substance) is estimated at an average 4-5 percent per year for the period FY 1978-90, and (2) the population is based on an estimate by the Ministry of Health and Welfare's Population Research Institute (126.28 million persons in FY 1990).

2. Decrease, exports, and products for use other than food, i.e., for feed, processing, and seeds, are included in the total demand.

3. The Net Food per Person is the consumption amount per year that can be used directly as food.

4. Priority Development of Agricultural Production

In order to carry out agricultural production most effectively in a country with limited natural resources, the council will promote the reorganization of agricultural production, bearing in mind the appropriate balance with imports.

In particular, the council will place strategic importance on the development of land-intensive agriculture, and will promote a policy of:

- (1) Promoting the collective use of land by expanding the management of nuclear farms, collectivizing planting, and forming production organizations, and, in addition, establishing planting rotations, and increasing the use of farmland.
- (2) Establishing logical land-use methods, such as rotating fields and rice paddies, according to the situation in the region, to realize the versatile production capacity of rice paddies.
- (3) Strengthening the relation between the livestock (particularly large livestock) breeding sector and the feed-producing sector, and promoting the expansion of feed production and harvest, and the efficient use of raw feed, as well as expanding fertility by restoration of manure. Promoting development of the mountains, forests, and plains as grasslands, and their use as pastures.

In particular, rice cultivation is the pivot of Japan's land-intensive agriculture, and considering that rice paddies are a national asset that has a high production capacity and a function of national preservation, Japan will develop their production, while striving for their long-term maintenance and an increase in their productivity.

Along with attempting new regional agricultural development that combines rotation crops and rice cultivation, the council will deal actively with quality and with cost reduction.

Reorganizing the use of rice paddies is a central topic in reorganizing agricultural production. In the middle and long term, the council should aim at developing regional agriculture and try to get rid of incentive pay for crop rotation early, by setting up basic conditions such as establishing a price system for staple crops, promoting the mechanization of rice paddies, and further increasing the productivity of crop rotation.

Furthermore,

- (1) With regard to feed crops, wheat, and soybeans, which are the main rotation crops for rice, it is necessary to strive for the collective use of land, promote the increase of income and profitability, and try to establish regional agriculture.
- (2) In connection with reorganizing the use of rice paddies, it is necessary to deal, from a middle and long-term point of view, with the policy for the production and distribution of rice intended for a use other than food, fully bearing in mind its significance, and points of issue.

II. Development and Direction of Future Policy

Based on this Agricultural Administration Council "report," future agricultural administration promotion will be based on the maintenance and strengthening of a comprehensive food self-sufficiency, and will aim at realizing strong agriculture, forestry, and fishing industries, by guaranteeing a healthy, abundant diet, and by increasing productivity. In addition, future policy will try to promote the vitality of agricultural, mountain, and fishing villages, and to maintain and cultivate green resources.

For this purpose, the administration is doing the following:

(1) The council recently requested a FY 1983 budget of roughly 3.6728 billion yen, since the basic thinking is that the items to be dealt with first under the budget are the efficient use of Japan's natural resources, the realization of highly-productive agriculture, and the provision of a stable supply of agricultural products suited to the demands of the people.

(2) The council plans to carry out necessary reforms in the legal system at the next ordinary session of the Diet. These reforms are:

(a) Ministry of Agriculture, Forestry, and Fisheries establishment laws (establishment of an agricultural Life Resources Research Institute, and of an Agricultural Environmental Technology Research Institute), and

(b) Forestry laws (maintenance and cultivation of green resources), and

(3) The council will establish a system for studying issues, such as other uses for rice, which this report said should receive concrete study, and it will promote study.

9991

CS0: 4105/055

SCIENCE AND TECHNOLOGY

JAPAN, U.S. EXCHANGE HELICOPTER PRODUCTION NOTES

OW170401 Tokyo KYODO in English 0354 GMT 17 Dec 82

[Text] Tokyo Dec 17 KYODO--Japan and the United States Friday exchanged notes on Japan's licensed production of advanced U.S. AH-1S antitank helicopters on the basis of the Japan-U.S. agreements on mutual defense assistance.

Foreign Minister Shintaro Abe and U.S. Ambassador to Japan Mike Mansfield exchanged the notes. Japanese and American defense officials signed memoranda stipulating details on the licensed production.

The memoranda said the Pentagon will provide Japan's Defense Agency with technical data for production and maintenance of AH-1S Huey Cobra antitank helicopters capable of carrying eight missiles.

The Pentagon and Defense Agency will take necessary measures to keep common models and functional convertibility of the antitank helicopters. Japan will also share expenses for research and development with the United States, Japanese officials said.

Japan will procure 12 AH-1S Huey Cobras each priced at about yen 2 billion (about 9 million [dollars]) at this current value in fiscal 1982 and plans to procure 43 others under the mid-term defense program estimate for fiscal 1983 to 1987.

Japan's Ground Self-Defense Force will deploy the AH-1S Huey Cobras at its fifth division in Hokkaido and other divisions.

As Japanese makers, Fuji Heavy Industries, Ltd. will produce airframes, Kawasaki Heavy Industries Ltd. engines and Nippon Electric Co. missiles.

CSO: 4300/012

SCIENCE AND TECHNOLOGY

FY83 ENERGY-RELATED BUDGET NOTED

Tokyo JAPAN PETROLEUM & ENERGY WEEKLY in English 13 Sep 82 pp 1-4

[Text] Requests for appropriations in the general account budget for fiscal 1983 (beginning in April 1983) submitted by government ministries and agencies by August 31 totaled ¥50.11 trillion (\$193 billion), the Finance Ministry announced. Compared to the original budget for fiscal 1982, this is only a 0.9 percent increase--a record low increase. Appropriations requests under the fiscal loan and investment program--the second budget--amounted to ¥22.5 trillion (\$86.5 billion), up 11 percent.

Preliminary work for drafting the fiscal 1983 "ultra austerity" budget started on September 1 to be finalized by the end of this year. Unprecedentedly severe shortfalls in fiscal 1982 revenues, reportedly climbing to ¥5 trillion (\$19 billion), called for the extremely stringent budget requests, except those for defense, foreign aid, and certain projects (including energy development and resources stockpile expansion projects) under the jurisdiction of the Ministry of International Trade and Industry (MITI).

The MITI budget requests for appropriations in fiscal 1983 on energy-related projects to be implemented under the five special accounts total ¥798,360 million (\$3,070 million), up 9.7 percent, as summarized below in comparison with the approved budget for fiscal 1982:

(Unit: ¥Million)	Fiscal '83	Fiscal '82	% Change ('83 vs '82)
	Budget Request	Approved Budget	
(A) Coal special account	136,493	136,250	+ 0.2
(B) Petroleum special account	400,370	353,524	+13.3
(C) Alternative energy special account	57,771	53,777	+ 7.4
	594,634	543,551	+ 9.4

Source of funds:

. Crude/fuel oil import duty	140,100	145,000
. Petroleum tax (as transferred from the general account)	444,000	385,000
. Surpluses carried over from preceding year	10,500	13,600
	594,600	543,600

(Unit: ¥Million)	Fiscal '83 Budget Request	Fiscal '82 Approved Budget	% Change ('83 vs '82)
(D) Electric power plant siting special account	72,844	71,932	+ 1.3
(E) Electric power resources diver- sification special account	<u>130,882</u> 203,726	<u>112,924</u> 184,226	<u>+16.6</u> +10.6

Source of funds:

. Electric power resources development promotion tax*	188,800	143,500	
. Surpluses carried over from preceding year	<u>14,900</u> 203,700	<u>40,700</u> 184,200	
Total (A+B+C+D+E)	798,360	727,777	+ 9.7

Listed below are the projects of primary importance:

-Oil and gas resources development (under the Petroleum Special Account)

Fiscal 1983 budget requests total ¥150.6 billion compared to the approved budget of ¥134.6 billion for fiscal 1982.

The government capital investment in the Japan National Oil Corp. (JNOC) is requested to be increased to ¥117.8 billion from the approved budget of ¥107.8 billion for fiscal 1982, thereby enabling JNOC to increase its financial aid to private exploration projects from ¥140 billion to ¥155 billion.

*The tax was instituted in 1974 to raise necessary funds to promote the siting of thermal/nuclear power plants in accordance with the "Three Laws" for the promotion of the electric power resources development. Under the three laws--i.e., the Law on the Development of Areas Adjacent to Electric Power Generating Facilities, the Law on the Electric Power Development Promotion Tax, and the Law on the Special Account for Implementation of the Electric Power Resources Development Measures--a specific tax is collected from electric utilities and direct the tax revenues to the environmental improvement of localities where power plants are in operation. The tax rate has been set at ¥0.3 per kwh sold since May 1, 1980. It is now proposed that this rate be increased 55 percent to ¥0.465 per kwh, effective from October 1, 1983 (JPEW, Aug. 23 - p 12).

The distribution of the tax revenue is and will be as follows:

(Unit: ¥/kwh)	Fiscal '83	Fiscal '82
To the siting special account	0.170	0.085
To the diversification special account	<u>0.295</u> 0.465	<u>0.215</u> 0.300

Among other projects are: R&D for oil shale resources development--requests totaling ¥2.1 billion vs ¥2.0 billion for fiscal 1982; geophysical reconnaissance survey for domestic oil/gas resources--requests totaling ¥9.1 billion vs ¥8.9 billion for fiscal 1982.

-Oil/LPG stockpile expansion (under the Petroleum Special Account)

Fiscal 1983 budget requests total ¥229.2 billion vs ¥200.2 billion for fiscal 1982.

Government-owned stockpile expansion--requests totaling ¥164.8 billion vs ¥149.1 billion for fiscal 1982; privately owned stockpile expansion--requests totaling ¥44.5 billion vs ¥31.3 billion; LPG stockpile expansion--requests totaling ¥4.0 billion vs ¥2.4 billion; grants-in-aid to localities cooperating with oil/LPG stockpiling projects--requests totaling ¥13.9 billion vs ¥13.5 billion, etc.

-R&D on residual oil processing technology (under the Petroleum Special Account)

Fiscal 1983 budget requests total ¥8.2 billion vs ¥7.3 billion for fiscal 1982.

-Coal resources development, including feasibility studies for overseas mine development (under the Alternative Energy Special Account)

Fiscal 1983 budget requests total ¥6.7 billion vs ¥8.6 billion for fiscal 1982.

-Promotion of coal-burning thermal power plants (under the Electric Power Resources Diversification Special Account)

Fiscal 1983 budget requests total ¥13.2 billion vs ¥6.1 billion for fiscal 1982.

-Promotion of R&D related to nuclear power development, including the construction of a demonstration advanced thermal converter reactor, and technical feasibility studies on Japan's second (i.e., privately owned) nuclear fuel reprocessing plant (under the Electric Power Resources Diversification Special Account)

Fiscal 1983 budget requests total ¥15.2 billion vs ¥11.1 billion for fiscal 1982.

-The Sunshine Project (partly under the General Account and partly under the Alternative Energy Special Account/Electric Power Resources Diversification Special Account)

Launched in 1974, the Sunshine Project calls for promotion of R&D to harness, by 2000, inexhaustible and clean energy sources such as solar,

geothermal and hydrogen energies and to liquefy and gasify coal for commercial use.

Fiscal 1983 budget requests total ¥37.7 billion vs ¥36.1 billion for fiscal 1982.

-The Moonlight Project (partly under the General Account and partly under the Alternative Energy Special Account/Electric Power Resources Diversification Special Account)

Launched in 1978 as a counterpart of the Sunshine Project, the Moonlight Project calls for promotion of R&D on energy conservation, including the development of magneto-hydrodynamics power generation, advanced gas turbines, battery energy storage, fuel cell generation, Stirling engines, etc.

Fiscal 1983 budget requests total ¥9.8 billion vs ¥9.5 billion for fiscal 1982.

-"Big Projects" (partly under the General Account and partly under the Petroleum Special Account)

Launched in 1966, the Big Projects call for promotion of R&D on a variety of pioneering projects which are beyond the financial capacity of private enterprises. The Big Projects include: development of a subsea oil production system, "C-1 Chemistry" for production of ethylene glycol, acetic acid, etc. from carbon monoxide and hydrogen, as separated from residual oil, tar sands, coke-oven gas and the like.

Fiscal 1983 budget requests total ¥16.5 billion vs ¥16.3 billion for fiscal 1982.

Among other projects to which MITI is attaching great importance in its budget requests for fiscal 1983 include the revitalization of basic materials industries. In an effort to rehabilitate the recession-stricken basic materials industries (such as aluminum smelting, paper & pulp, fertilizer and petrochemical industries), MITI plans to institute/strengthen preferential tax and financial aid and legislative measures to help them scrap surplus facilities and consolidate corporate structures. Appropriations of the Japan Development Bank loans totaling ¥25 billion are newly requested for these purposes.

Supplement

Japan's petroleum import duties/consumption taxes and their distribution in the fiscal 1982 budget are as shown below. It should be noted that out of the duty/tax revenues totaling ¥3,053.2 billion (\$11,740 million), only ¥395.3 billion, or 12.9 percent of total, is used to implement petroleum and alternative energy development projects.

Source of Funds

(Unit: YMillion)

Distribution

Crude & fuel oil import duties*:	145,000	134,700	-	Coal special account
		10,300	-	
Crude oil @Y640/kl (39¢/bbl)			-	
Fuel oil A @Y955/kl (58¢/bbl)			-	
Fuel oil B @Y730/kl (45¢/bbl)			-	
Fuel oil C @Y660/kl (40¢/bbl)			-	
			-	Petroleum & alternative energy special accounts
Petroleum tax @3.5% of (c.i.f. + duty)	434,000	385,000	-	
		49,000	-	General account
Gasoline tax @Y53,800/kl (78¢/USG)		1,916,000	-	
Gas oil tax @Y24,300/kl (35¢/USG)		462,400	-	
LPG @Y17,500/ton (\$67.3/ton)		32,000	-	
Jet fuel @Y26,000/kl (38¢/USG)		63,800	-	
			-	Road construction
			-	Airport construction/maintenance

(*) Import duties from kerosine/gas oil/LPG, etc. go to the general account.

CS0: 4306/005

SCIENCE AND TECHNOLOGY

COMPUTER TRANSLATES JAPANESE INTO ENGLISH

OW210653 Tokyo KYODO in English 0633 GMT 21 Oct 82

[Text] Tokyo Oct 21 KYODO--Fujitsu, Ltd. said Thursday that it had started using its computerized automatic translation system to convert its software reports from Japanese into English.

A spokesman for Japan's largest computer maker said that the large computer translates the reports written in "Katakan" characters by using some 7,000 words and phrases input in the magnetic disc.

Known as "Atuas 1" the device considerably reduces the translation workload, he said. The system now being used at its plant in Numazu, Shizuoka Prefecture, does limited work such as translating software reports, but the spokesman said that it will become possible to translate other literature by improving the "dictionary" in which words and phrases are "memorized" in magnetic files.

He also said that the company is now making a prototype of speech input and machine translation system by combining a voice recognition system and a Japanese word processor so that sentences read loudly for input in the device are automatically translated and the English sentences are printed out.

The government's Agency of Industrial Sciences and Technology is developing such systems as part of its 10-year project to develop the "fifth generation" computer in order to break the language barrier.

Nippon Electric Co. and Hitachi, Ltd. are developing similar systems and conducting tests on the prototypes.

The agency has put into practical use a system which automatically translates titles of U.S. literature at its research information processing system in Tsukuba, Ibaraki Prefecture.

CSO: 4300/012

SCIENCE AND TECHNOLOGY

JAPAN TO LAUNCH COMMUNICATIONS SATELLITE 4 FEB

OW011245 Tokyo KYODO in English 1222 GMT 1 Dec 82

[Text] Tokyo Dec 1 KYODO--The National Space Development Agency will launch Japan's first practical communications satellite from its Tanegashima Space Center in Kagoshima Prefecture February 4.

The project was included in rocket-launching plans for the January-February period approved Wednesday by the nation's supreme decision-making body on space development, presided over by the director general of the Science and Technology Agency.

The satellite, code-named CS-2A, measures 2.2 meters in diameter, two meters in length and some 350 kilograms in weight. It mounts six semi-millimetric wave repeaters, in addition to two conventional microwave repeaters, which altogether have 4,000 telephone circuits, to meet growing demands for data communications.

The yen 10 (dollar 40 million) billion satellite is to be put into stationary orbit over the equator by N-2 rocket.

Another satellite of the same specifications and capability--CS-2B will be launched likewise in August to serve as a spare for the CS-2A.

These satellites were 64 percent locally developed, though their "hearts" were wholly indigenous.

Out of the total launching cost of about yen 40 billion, 40 percent is paid by the governmental Space Development Agency and the remaining portion by a consortium of the Nippon Telegraph and Telephone Public Corporation (NTT), Kokesai Denshin Denwa Co. (KDD) and the Japan Broadcasting Corporation (NHK).

Besides the two satellites, the agency will also put up a small rocket--TT500-12--for experimental production of amorphous semiconductors in non-gravity space.

Meanwhile, the Space Science Research Institute will launch an eight (as received) rocket from its space observation center in Uchinoura, Kagoshima, around the same time to observe black holes and other special astronomical activities.

CSO: 4300/012

SCIENCE AND TECHNOLOGY

AGGRESSIVE INVESTMENT IN HIGH TECHNOLOGY URGED

OW250633 Tokyo KYODO in English 0614 GMT 25 Nov 82

[Text] Tokyo Nov 25 KYODO--An advisory body to the Ministry of International Trade and Industry (MITI) called Thursday for aggressive investment in the high-technology field and expansion of energy-related investment to transform Japan into a technologically independent country.

The 32-member Investment Finance Committee of the Industrial Structure Council also recommended that the government immediately embark on a program to promote investment and improve the investment climate through an investment tax credit and other measures.

The committee made recommendations after MITI's poll in September showed a slowdown in the nation's plant and equipment investment in the current fiscal year.

According to MITI's semiannual survey, plant and equipment investment in fiscal 1982, ending next March 31, is projected to reach yen 11.8 trillion (dollar 47.2 billion), up 11.4 percent from the previous fiscal year.

Of the total, the manufacturing sector accounts for yen 5.6 trillion (dollar 22.5 billion) and the nonmanufacturing sector the remaining yen 6.2 trillion (dollar 24.7 billion).

The steel industry is expected to boost fiscal 1982 investment by 36.1 percent over the year before to yen 1.1 trillion (dollar 4.4 billion) chiefly to improve seamless pipe production and continuous casting facilities.

Electronic and electric firms are also increasing their investment in the current fiscal year by 9 percent to yen 1.1 trillion (dollar 4.3 billion) to capitalize on brisk demand for office automation (OA) equipment. Japanese automakers are also spending 3.6 percent more, yen 1.2 trillion (dollar 4.9 billion).

The MITI poll of 1,358 firms with capital at yen 100 million (dollar 400,000) or more showed that in the nonmanufacturing sector, wholesalers and retailers, and leasing companies posted double-digit gains of 18.1 percent and 20.4 percent respectively in fiscal 1982 investment to yen 505.7 billion (dollar 2 billion) and yen 1.5 trillion (dollar 5.9 billion), reflecting the brisk business of OA equipment leasing.

Electric power and city gas concerns are also raising their investment by 10.4 percent and 11.3 percent to yen 3.7 trillion (dollar 14.9 billion) and yen 284.6 billion (dollar 1.1 billion).

A MITI official said the manufacturing sector in general tends to spend chiefly for cost reduction and energy conservation while demand is the No 1 determinant of investment strategies in the nonmanufacturing sector.

For example, investment for energy conservation and replacement of oil with alternative energy in the current fiscal year is up 5.3 percent and 21.1 percent at yen 471.2 billion (dollar 1.9 billion) and yen 79.1 billion (dollar 316 million), respectively.

Investment for research and related purposes by steel, autos, petrochemical and 10 other "main" industries is slated to grow by 11.8 percent to yen 229.1 billion (dollar 0.9 billion), the survey found.

With these investment trends in mind, the advisory panel proposed that Japan strengthen its technology development power to promote a creative and knowledge-intensive industrial structure for the establishment of a technologically independent state.

CSO: 4300/012

SCIENCE AND TECHNOLOGY

JAPAN DEVELOPS NEW HEAT-RESISTANT ALLOY

OW091103 Tokyo KYODO in English 1000 GMT 9 Dec 82

[Text] Tokyo Dec 9 KYODO--The Science and Technology Agency's Metal Materials Research Institute Thursday announced success in developing a particularly hard, heat-resistant alloy in a state of nongravity induced in rocket flight. The success came after an abortive attempt to conduct a similar experiment in space two years ago.

The institute said a TT-500 rocket launched in mid-August from the Tanegashima Space Center in Kagoshima Prefecture carried a small electric furnace.

A mixture of titanium carbide, nickle and molybdenum particles were heated in the furnace to a temperature of 1,500 degrees C. and the resulting melted compound was then cooled. The entire process took place in a six-minute period of zero-gravity, researchers said.

The new alloy thus produced was a cylinder with a diameter of a centimeter and a length of 3.5 centimeters. The alloy registered 463 on the Vickers scale, an indicator of hardness, or double the hardness of any alloy made on the ground. The comparable figure for iron is 100, the researchers said.

Microscopic observations found the blending of the particles in the new alloy to be thorough, they said. The new metal can resist temperatures of up to some 1,100 degrees for 100 hours running, they said.

One of the possible uses for the new alloy would be aircraft turbines which could reduce fuel consumption by 5 percent, the researchers said.

CSO: 4300/012

SCIENCE AND TECHNOLOGY

NTT ANNOUNCES TRIAL MANUFACTURE OF 1K GAAS STATIC RAM

OW100825 Tokyo KYODO in English 0801 GMT 10 Nov 82

[Text] Tokyo, 10 Nov, KYODO--The Nippon Telegraph and Telephone Public Corp. (NTT) announced Wednesday its laboratory has manufactured on trial a 1 kilo-bit gallium arsenide static RAM (random access memory) for the first time in the world.

A spokesman said that in the fabrication of the RAM, the laboratory-developed new process to produce smaller and faster field effect transistors (FET) was employed.

The spokesman said a process for selective ion-implantation into LEC (liquid encapsulated czochralski) semi-insulating crystal was employed for active layer formation.

He said a 3.7-nanosecond (one nanosecond is one billionth of a second) address access time with 280 milliwatt power dissipation (consumption) was obtained.

This success will extend gallium arsenide LSI (large-scale integrated circuits) applications in the field of very high speed integrated circuits where it is difficult to use silicon LSIs, the spokesman said.

It is believed that the achievement will make a significant contribution toward boosting the performance of computers in the future.

CSO: 4300/009

SCIENCE AND TECHNOLOGY

FOREIGN MINISTER ON MILITARY TECHNOLOGY ISSUE

OW030433 Tokyo KYODO in English 0420 GMT 3 Dec 82

[Text] Tokyo Dec 3 KYODO--Japan will likely accept before long an 18-month-old American request to supply military-related technology to the United States, Foreign Minister Shintaro Abe said Friday.

Abe told reporters final judgment is left to Prime Minister Yasuhiro Nakasone before leaving for Washington for talks with President Ronald Reagan next month. This was agreed among Nakasone and four cabinet ministers concerned in a meeting that followed a regular cabinet session, according to Abe.

Besides Nakasone and Abe, Minister of International Trade and Industry Sandanori Yamanaka, Director General of the Defense Agency Kazuo Tanikawa and Chief Cabinet Secretary Masaharu Gotoda as well as Director of the Cabinet Legislative Bureau Reijiro Tsunoda were present at the meeting, officials said.

Abe said Takao Fujinami, deputy chief cabinet secretary, will head a team of officials to renew negotiations among the government agencies concerned about the matter.

MITI Minister Yamanaka told reporters settlement of the issue should not be delayed for long, but it needs not to be timed with the prime minister's forthcoming U.S. visit. Yamanaka's comment was taken to indicate he was against any hasty decision on the problem.

The United States strongly requested then defense chief Joji Omura in June 1981 to assist the United States in providing military technology and renewed the request during various meetings between the government officials of the two countries.

The Foreign Ministry and the Defense Agency were ready to share technology on the basis of the Japan-U.S. Security Treaty and the mutual defense assistance arrangements, and outside Japan's declared three principles against arms export.

The principles ban shipment of weapons to communist countries, to nations on which the United Nations put arms embargos and to countries involved in armed international conflicts.

The MITI, however, assumed a cautious attitude because of apparent concern about possible appropriation of advanced technology provided by Japan for the civil purposes that could jeopardize Japan's position in world trade.

Former prime minister Zenko Suzuki avoided making any political decision to conclude the controversial issue.

Nakasone, who plans to visit the United States January 17-21 for talks with Reagan, has begun trying to put an end to the problem in a bid to improve bilateral relations which are affected by the huge trade imbalance in favor of Japan.

CSO: 4300/012

SCIENCE AND TECHNOLOGY

BRIEFS

MILITARY TECHNOLOGY EXCHANGE--Tokyo Dec 1 KYODO--The Japanese Government will make a decision on the question of military technology exchange between Japan and the United States at an early date, Chief Cabinet Secretary Masaharu Gotoda said Wednesday. Gotoda told a news conference that mid-January is one of the targeted dates for the government to decide. Prime Minister Yasuhiro Nakasone is expected to visit Washington at that time for talks with President Ronald Reagan. Gotoda said the Ministries of Foreign Affairs and International Trade and Industry first must coordinate their views on the issue, then the Defense Agency will join in working out the matter, he added. [Text]
[OW010543 Tokyo KYODO in English 0314 GMT 1 Dec 82]

HOME SATELLITE RECEIVER--Tokyo 8 Nov KYODO--Toshiba Corp., a major electric machinery maker, said Monday it has developed a home-use receiver for broadcasting satellite to be launched in 1984. The company said the receiver will directly catch super high-frequency waves from broadcasting satellites and will digitally reproduce sound on a television set at home. The equipment is made up of an offset parabolic antenna, another outdoor unit that amplifies radio and intermediate frequencies and an indoor unit that digitally reproduces sound signals from satellites. The broadcasting satellite is thought to be one of the promising new media systems. When the system starts actual operations, viewers living in mountains and in areas surrounded by tall buildings will be able to enjoy clear television pictures directly beamed from the satellite. Moreover, the new broadcasting system is believed to enable new services such as still-picture, multi-channel sound and teletext broadcasts. The semi-governmental Japan Broadcasting Corp. plans to undertake the new broadcasting service in February 1984 when an operational broadcasting satellite was orbited in 1978 by Japan. [Text] [OW090101 Tokyo KYODO in English 1108 GMT 8 Nov 82 OW]

PRC REFRIGERATOR PLANT ORDER--Tokyo 5 Nov KYODO--Hitachi, Ltd. has received a yen 800 million (dollar 2.8 million) order from China's Guangzhou City for a refrigerator manufacturing plant and technology to meet growing domestic demand for refrigerators company officials said Thursday. It is the first Chinese refrigerator plant order placed with a Japanese company so far. Under the agreement, Hitachi will export major machineries and related equipment to China and renovate the existing factory there to increase its production capacity from the present 10,000-20,000 a year to 50,000. The new plant will start operation in April 1984 and manufacture three models of refrigerators. [Text]
[OW090101 Tokyo KYODO in English 0422 GMT 5 Nov 82 OW]

POWER PLANT CLEANER ROBOT--Tokyo 6 Nov KYODO--Mitsubishi Heavy Industries, Ltd. said Saturday the company and Tokyo Electric Power Co. have developed a robot claimed to be 10 times more efficient in cleaning seawater intakes of nuclear and thermoelectric power plants than conventional methods, a Mitsubishi spokesman said Friday. Equipped with a television camera, wheels, a rotating brush and other equipment, the remote-controlled robot is designed to clean intakes clogged with shellfish and other sea creatures. It previously took nearly a month and cost more than yen 10 million (dollar 36,000) to clean intakes of a plant, 10 times more than what is required using the robot, the official said. With a 110-meter hose provided, the robot is able to cover an area of 1,000 square meters in an hour. The automated cleaning system is priced at some yen 100 million (dollar 360,000) per unit. [Text] [OW090101 Tokyo KYODO in English 0630 GMT 6 Nov 82 OW]

ICEBREAKER'S ANTARCTIC DEPARTURE--Tokyo, 25 Nov (KYODO)--Japan's icebreaker Fuji left a Tokyo pier for the country's south polar Showa Base Thursday, charged with international missions. Aboard the 5,250-ton vessel were 45 members of the 24th Antarctic observation team led by Shinji Mae, and 182 crew members, including the skipper. This is the 18th mission for Fuji, which is to be put out of service next year after this year's expedition giving way to the 11,600-ton Shirase. Because of this, fans of the time-honored vessel gathered at Harumi pier to send it off, along with relatives of the team members and their veterans. Fuji is to participate in international joint atmospheric observation, as well as research on oceanic ecological systems and biological resources, as it did in the last mission. Three researchers from Alaska University, a Japanese official of the Maritime Safety Agency, and a KYODO News Service photographer are accompanying the 24th team. [Text] [OW090519 Tokyo KYODO in English 0237 GMT 25 Nov 82 OW]

SYNCHROTRON RADIATION FOR VLSI LITHOGRAPHY--Tokyo, 1 Dec (KYODO)--A Japanese Government laboratory has succeeded in making a very fine pattern for VLSI (very large scale integrated circuits) devices using synchrotron radiation lithography, it was revealed Wednesday. A spokesman for the electrotechnical laboratory of the Agency of Industrial Science and Technology said its researchers have successfully developed an electronic circuit line pattern less than 0.6 micron (one-thousandth of a millimeter) wide with a polymethyl methacrylate (PMMA) photoresist on a silicon substrate with a diameter of 2 inches. The spokesman said synchrotron radiation, with an electron energy of 600 milli-electron volts and a current of 100 milliamperes, was generated from an electron storage ring of a laboratory-built synchrotron. He said this achievement is believed to pave the way for achieving 1.5 times high density in VLSI's, and improving the performance of computers and other electronic devices appreciably. [Tokyo KYODO in English 0441 GMT 1 Dec 82 OW]

TOSHIBA CMOS DEVELOPMENT--Tokyo, 25 Nov (KYODO)--Toshiba Corp. said Thursday it has developed a CMOS large-scale integrated circuit (LSI), featuring the world's highest degree of integration and fastest propagation delay time. The circuit, with 20,000 gates and a 1-5 nanosecond (a nanosecond is a billionth of a second) delay time is based on Toshiba's fine pattern processing technology which was used to create circuit lines with a width of 2 microns, enabling 88,000 elements to be placed on a single LSI chip, company officials said. Toshiba also developed methods to use three-level aluminum metalization for the first time in CMOS LSI's to get such speed. The company is expected to start marketing the newly developed CMOS gate arrays both at home and abroad in 1984, they said. [Text] [Tokyo KYODO in English 1121 GMT 25 Nov 82 OW]